

EXPORT DIVISION
13 EAST 40TH ST.
NEW YORK 16, N. Y.

NEW

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G1959-60 CATALOG

[illegible]

SPECIAL UNITS AND MILITARY STANDARDS

COMMERCIAL GRADE, FULL INDUSTRIAL LINE

DO.T DI-T. TRANSISTOR TRANSFORMERS TO MIL

FILTER, HIGH Q, ALL TYPES

HERMETIC, 400 STOCK TYPES TO MIL

HIPERMALLOY HI-FI, BROADCAST

LINEAR STANDARD, TOPS IN HI-FI

OUNCER, WIDE RANGE, 1 OZ.

PLUG-IN, WIDE RANGE, 1.5 OZ.

REPLACEMENT

SPECIAL SERIES (HAM)

SUBOUNCER

ULTRA COMPACT

CG	DO-T DI-T	H	HA	LS	O	P	R	S	SO SSO	A
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ELECTRIC WAVE FILTERS

3,4		AIRCRAFT
3,4	5,6,7	BAND PASS
4		DISCRIMINATORS
	7	EQUALIZERS
3,4	5, 6	HIGH PASS
	5, 6	INTERSTAGE
3		LINEAR PHASE
3,4		LOW FREQUENCY
3,4	5, 6	LOW PASS
	7	SOUND EFFECTS
	7	TELEGRAPH
4	6	TELEMETERING
	6	ULTRAMINIATURE

HIGH Q COILS

8	9, 10 12	TOROIDS
	10	TAPPED TOROIDS
8	9, 10 12	LOW FREQUENCY
	12	L DECADES
	11	VARIABLE
	11	TAPPED VARIDUCTORS
	9	MINIATURE

MAGNETIC AMPLIFIERS

19	20	HIGH GAIN
19	20	SATURABLE REACTORS
19	20	SERVO MOTOR

REACTORS

[illegible]

TRANSFORMERS

38												42				ADJUSTABLE VOLTAGE				
38		17												40				BIAS		
38												34						BOOSTER		
																		BRIDGING		
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13																		CURRENT LIMITING		
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				17																TRANSISTOR SUPPLY
37																		ULTRASONIC		

INDEX AND NET PRICE LIST

EQUALIZERS and SOUND EFFECTS FILTERS

3A	7	\$180.00
3AX	7	270.00
4C	7	240.00

INTERSTAGE and LINE FILTERS

Special Freq. \$48.00

BMI—60, 100, 120, 400, 500, 750, 1000, 1500, 2000, 3000, 4000, 5000, 10000	Pg. 5	\$27.00
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BTI—60, 100, 120	Pg. 5	\$27.00
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HMI—200, 400, 500, 800, 1000, 2000, 3000	Pg. 5	\$30.00
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LMI—200, 400, 500, 800, 1000, 1500, 2000, 2500, 3000, 4000, 5000, 10000

Pg. 5	\$30.00
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BML—400, 1000	Pg. 5	\$27.00
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HML—200, 300, 500, 1000	Pg. 5	\$33.00
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LML—1000, 1500, 2000, 2500, 4000, 8000, 10000, 12000	Pg. 5	\$30.00
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MINIATURE FILTERS

Special Freq. \$48.00

BPM—400, 750, 1000, 1500, 2000, 10000

Pg. 6	\$27.00
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HPM—500, 1000	Pg. 6	\$30.00
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LPM—200, 500, 1000, 2000, 3000, 5000	Pg. 6	\$30.00
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TELEGRAPH RECEIVING FILTERS

TGR—425, 595, 765,
935

Pg. 7	\$66.00
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TGR—1105, 1275, 1445, 1615	Pg. 7	\$63.00
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TGR—1785, 1955, 2125, 2295	Pg. 7	\$60.00
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TGR—2465, 2635, 2805, 2975	Pg. 7	\$57.00
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TELEGRAPH TRANSMITTING FILTERS

TGT—425, 595, 765,
935

Pg. 7	\$39.00
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TGT—1105, 1275, 1445, 1615	Pg. 7	\$36.00
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TGT—1785, 1955, 2125, 2295	Pg. 7	\$33.00
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TGT—2465, 2635, 2805, 2975	Pg. 7	\$30.00
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TELEMETERING FILTERS

TMN—4, .56, .73,
.96, 1.3, 1.7, 2.3,
3.0, 3.9, 5.4, 7.35

Pg. 6	\$39.00
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TMN—10.5, 14.5, 22, 30, 40, 52.5, 70	Pg. 6	\$36.00
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TMW—22, 30, 40, 52.5, 70	Pg. 6	\$36.00
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ULTRA COMPACT

Type	Page	Net
A-10	36	\$13.20
A-11	36	12.00
A-12	36	12.00
A-14	36	10.80
A-15	36	9.90
A-16	36	9.90
A-17	36	12.00
A-18	36	12.00
A-19	36	12.00
A-20	36	14.40
A-21	36	12.00
A-22	36	9.90
A-23	36	9.90
A-24	36	12.90
A-25	36	12.00
A-26	36	13.20
A-27	36	12.00
A-28	36	10.20
A-30	36	10.20
A-32	36	6.60
A-33	36	2.70

COMMERCIAL GRADE

CG-1C	38	54.00
CG-1S	38	54.00
CG-2L6	37	13.80
CG-15	37	12.00
CG-16	37	12.00
CG-19	37	12.00
CG-20	37	15.00
CG-21	37	24.00
CG-33	38	9.00
CG-34	38	10.20
CG-40	38	8.10
CG-44	38	6.90
CG-45	38	6.00
CG-48C	38	7.50
CG-51AX	38	9.00
CG-53AX	38	10.50
CG-59AX	38	10.80
CG-100	38	9.00
CG-101	38	9.00
CG-102	38	13.20
CG-103	38	13.20
CG-104	38	15.00
CG-105	38	15.00
CG-108	38	27.00
CG-109	38	27.00
CG-120	38	15.00
CG-121	38	18.00
CG-122	38	15.00
CG-124	38	15.00
CG-125	38	18.00
CG-126	38	24.00
CG-131	37	9.90
CG-132	37	9.90
CG-133	37	10.50
CG-134	37	9.00
CG-135	37	9.90

CG-136 37 \$13.20

CG-137	37	8.40
CG-140	37	7.80
CG-141	37	9.00
CG-233	37	9.00
CG-235	37	12.00
CG-300	38	16.20
CG-301	38	24.00
CG-302	38	30.00
CG-303	38	36.00
CG-304	38	141.00
CG-305	38	63.00
CG-306	38	150.00
CG-307	38	138.00
CG-308	38	162.00
CG-309	38	360.00
CG-310	38	309.00
CG-311	38	66.00
CG-312	38	66.00
CG-315	38	14.40
CG-316	38	21.00
CG-333	37	9.00
CG-422	38	21.00
CG-428	38	24.90
CG-429	38	24.90
CG-431	38	36.00
CG-433	37	9.90
CG-710	37	12.00
CGU-1	37	15.00
CGU-2	37	17.40
CGU-3	37	22.50
CGU-4	37	25.50
CGU-5	37	26.10
CGU-6	37	39.00
CGU-7	37	39.90
CGU-8	37	72.00
CGU-9	37	135.00
CVA-1	38	12.00
CVA-2	38	14.10
CVA-3	38	18.00
CVA-4	38	21.00
CVA-5	38	36.00
CVL-1	37	9.00
CVL-2	37	10.50
CVL-3	37	15.00
CVM-0	38	10.50
CVM-1	38	13.80
CVM-2	38	18.00
CVM-3	38	21.00
CVM-4	38	39.00
CVM-5	38	105.00
CVP-1	37	13.20
CVP-2	37	14.40
CVP-3	37	21.00
CVP-4	37	24.00
CVP-5	37	39.00

DECADE INDUCTORS

DI-1	12	42.00
DI-2	12	45.00

DI-3 12 \$51.00

DI-4	12	66.00
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DI-T'S

DI-T1	28	6.00
DI-T2	28	5.40
DI-T3	28	5.40
DI-T5	28	5.40
DI-T8	28	4.80
DI-T9	28	6.60
DI-T10	28	6.60
DI-T11	28	6.60
DI-T19	28	6.00
DI-T20	28	6.00
DI-T21	28	6.00
DI-T22	28	6.00
DI-T23	28	6.90
DI-T25	28	7.20
DI-T26	28	5.70
DI-T27	28	4.80
DI-T28	28	4.80
DI-T36	28	7.50
DI-TSH	28	.90

DO-T'S

DO-T1	28	6.00
DO-T2	28	5.40
DO-T3	28	5.40
DO-T4	28	5.40
DO-T5	28	5.40
DO-T6	28	6.00
DO-T7	28	6.60
DO-T8	28	4.80
DO-T9	28	6.60
DO-T10	28	6.60
DO-T11	28	6.60
DO-T12	28	5.70
DO-T13	28	5.70
DO-T14	28	6.00
DO-T15	28	6.00
DO-T16	28	6.00
DO-T17	28	6.00
DO-T18	28	6.30
DO-T19	28	6.00
DO-T20	28	6.00
DO-T21	28	6.00
DO-T22	28	6.00
DO-T23	28	6.90
DO-T24	28	7.50
DO-T25	28	7.20
DO-T26	28	5.70
DO-T27	28	4.80
DO-T28	28	4.80
DO-T29	28	5.70
DO-T30	28	5.70
DO-T31	28	6.00
DO-T32	28	6.00
DO-T33	28	6.00
DO-T34	28	6.00
DO-T35	28	6.30
DO-T36	28	7.50
DO-TSH	28	.90

FT FILAMENT

FT-1	41	\$ 2.58
FT-2	41	2.70
FT-3	41	3.00
FT-4	41	3.00
FT-5	41	3.60
FT-6	41	3.60
FT-7	41	3.60
FT-8	41	4.20
FT-10	41	4.50

HERMETIC

H-1	26	9.00
H-2	26	9.90
H-3	26	7.80
H-4	26	7.80
H-5	26	8.40
H-6	26	10.20
H-7	26	9.60
H-8	26	9.00
H-9	26	9.00
H-10	26	8.40
H-11	26	7.50
H-12	26	9.60
H-13	26	9.00
H-14	26	9.00
H-15	26	9.00
H-16	26	9.00
H-19A	26	16.50
H-20	26	15.00
H-21	26	18.00
H-22	26	15.90
H-23	26	16.20
H-24	26	10.80
H-25	26	15.00
H-26	26	15.00
H-27	26	15.00
H-30	26	9.00
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H-32	26	9.00
H-33	26	9.00
H-35	26	7.80
H-36	26	9.00
H-37A	26	9.00
H-38	26	9.60
H-39	26	9.60
H-40A	26	9.60
H-41A	26	9.60
H-45	24	6.90
H-46	24	6.90
H-47	24	6.90
H-48	24	6.90
H-49	24	6.90
H-50	24	6.90
H-51	24	7.20
H-52	24	7.20
H-53	24	7.20
H-54	24	7.50
H-55	24	7.50
H-56	24	8.40
H-57	24	8.40

H-58 24 \$90.00

H-60	24	6.90
H-61	24	6.90
H-62	24	6.90
H-63	24	6.90
H-64	24	6.90
H-65	24	6.90
H-66	24	6.90
H-67	24	6.90
H-68	24	6.90
H-69	24	60.00
H-70	16	7.20
H-71	16	8.40
H-72	16	9.00
H-73	16	11.40
H-74	16	12.90
H-75	16	15.00
H-76	16	24.00
H-77	16	27.00
H-78	16	34.50
H-79	16	90.00
H-80	15	12.90
H-81	15	18.00
H-82	15	20.40
H-83	15	21.00
H-84	15	26.40
H-85	15	30.00
H-86	15	30.90
H-87	15	36.00
H-88	15	45.00
H-89	15	49.50
H-90	15	21.00
H-91	15	27.00
H-92	15	33.00
H-93	15	49.50
H-94	17	18.00
H-95	17	28.80
H-96	17	48.00
H-97	17	15.00
H-98	17	21.00
H-99	17	30.00
H-100	17	39.00
H-101	17	14.10
H-102	17	15.00
H-103	17	17.40
H-104	17	19.50
H-105	17	5.10
H-106	17	6.00
H-107	17	7.50
H-108	17	9.00
H-109	17	10.20</

INDEX AND NET PRICE LIST

Type	Page	Net
HQA-9	9	\$ 9.60
HQA-10	9	9.90
HQA-11	9	9.90
HQA-12	9	10.80
HQA-13	9	11.40
HQA-14	9	12.90
HQA-15	9	13.80
HQA-16	9	15.00
HQA-17	9	15.90
HQA-18	9	16.80
HQB-1	9	15.00
HQB-2	9	15.30
HQB-3	9	15.90
HQB-4	9	16.80
HQB-5	9	17.40
HQB-6	9	18.00
HQB-7	9	18.90
HQB-8	9	19.80
HQB-9	9	21.00
HQB-10	9	21.90
HQB-11	9	22.80
HQB-12	9	24.00
HQC-1	9	15.60
HQC-2	9	16.80
HQC-3	9	18.00
HQC-4	9	19.80
HQC-5	9	24.00
HQD-1	9	15.60
HQD-2	9	16.80
HQD-3	9	18.00
HQD-4	9	19.80
HQD-5	9	24.00
HQE-1	9	7.80
HQE-2	9	7.80
HQE-3	9	8.10
HQE-4	9	8.40
HQE-5	9	8.70

HVC VARIDUCTORS		
HVC-1	11	9.00
HVC-2	11	9.00
HVC-3	11	9.00
HVC-4	11	9.00
HVC-5	11	9.00
HVC-6	11	9.00
HVC-7	11	9.60
HVC-8	11	9.60
HVC-9	11	9.60
HVC-10	11	9.90
HVC-11	11	10.80
HVC-12	11	12.00

LINEAR STANDARD		
LS-6	34	24.00
LS-6L1	34	36.00
LS-6L4	34	54.00
LS-10	33	21.00
LS-10X	33	21.00
LS-12	33	25.20
LS-12X	33	24.00
LS-14X	33	24.00
LS-15X	33	24.00
LS-18	33	18.00
LS-19	33	18.00
LS-21	33	18.00
LS-25	33	27.00
LS-26	33	24.00
LS-27	34	24.00
LS-30	33	22.50
LS-30X	33	24.00
LS-31	33	21.00
LS-32	33	30.00
LS-33	34	21.00
LS-34	34	30.00
LS-35	34	24.00
LS-40	33	30.00
LS-47	34	24.00

Type	Page	Net
LS-48	34	\$54.00
LS-50	34	21.00
LS-51	34	27.00
LS-52	34	24.00
LS-54	34	18.00
LS-55	34	24.00
LS-56	34	24.00
LS-57	34	18.00
LS-58	34	51.00
LS-61	34	24.00
LS-63	34	18.00
LS-65	34	42.00
LS-140	33	24.00
LS-141	33	21.00
LS-150	34	21.00
LS-151	34	21.00
LS-691	34	570.00
LS-692	34	900.00

MAGAMPS		
MAT-1	20	27.00
MAT-2	20	30.00
MAT-3	20	36.00
MAT-4	20	39.00
MAT-5	20	10.80
MAT-6	20	9.00

CABLE UNITS		
MC-1	42	10.20
MC-2	42	12.00

MINIDUCTORS		
MH-1	9	6.00
MH-2	9	6.00
MH-3	9	6.30
MH-4	9	6.60
ML-1	9	7.20
ML-2	9	7.20
ML-3	9	7.20
ML-4	9	7.50
ML-5	9	7.50
ML-6	9	7.50
ML-7	9	7.50
ML-8	9	7.50
ML-9	9	7.80
ML-10	9	8.10
MM-1	9	6.00
MM-2	9	6.00
MM-3	9	6.30
MM-4	9	6.60

MQ TOROIDS		
MQA-1	10	7.50
MQA-2	10	7.80
MQA-3	10	8.10
MQA-4	10	8.40
MQA-5	10	8.70
MQA-6	10	9.00
MQA-7	10	9.30
MQA-8	10	9.60
MQA-9	10	9.90
MQA-10	10	10.20
MQA-11	10	10.50
MQA-12	10	10.80
MQA-13	10	11.10
MQA-14	10	11.40
MQA-15	10	12.00
MQA-16	10	12.90
MQA-17	10	13.80
MQA-18	10	15.00
MQA-19	10	18.00
MQB-1	10	12.90
MQB-2	10	13.20
MQB-3	10	13.50
MQB-4	10	13.80

Type	Page	Net
MQB-5	10	\$14.10
MQB-6	10	14.40
MQB-7	10	14.70
MQB-8	10	15.00
MQB-9	10	15.90
MQB-10	10	16.80
MQB-11	10	18.00
MQB-12	10	19.20
MQD-1	10	15.00
MQD-2	10	15.60
MQD-3	10	16.20
MQD-4	10	16.80
MQD-5	10	18.00
MQD-6	10	21.00
MQE-1	10	7.20
MQE-2	10	7.50
MQE-3	10	7.80
MQE-4	10	7.80
MQE-5	10	8.10
MQE-6	10	8.40
MQE-7	10	8.40
MQE-8	10	8.70
MQE-9	10	8.70
MQE-10	10	9.00
MQE-11	10	9.00
MQE-12	10	9.30
MQE-13	10	9.90
MQE-14	10	10.80
MQE-15	10	12.00

LOW FREQU. COILS		
MQL-0	12	24.00
MQL-1	12	24.00
MQL-2	12	24.00
MQL-3	12	25.50
MQL-4	12	27.00
MQL-5	12	28.50

OUNCER		
O-1	29	7.80
O-2	29	7.80
O-3	29	7.50
O-4	29	6.60
O-5	29	6.60
O-6	29	7.50
O-7	29	7.50
O-8	29	7.80
O-9	29	7.80
O-10	29	8.40
O-11	29	7.80
O-12	29	7.80
O-13	29	6.30
O-14	29	7.50
O-15	29	7.50
O-16	29	10.20
O-17	29	1.50
O-18	29	8.40
O-19	29	8.40
O-20	29	8.40
O-21	29	7.80
O-22	29	7.80
O-23	29	6.00
O-24	29	5.70

PLUG-IN		
P-1	29	9.00
P-2	29	9.00
P-3	29	8.40
P-6	29	8.40
P-7	29	8.40
P-8	29	9.00
P-9	29	9.00
P-10	29	9.00
P-11	29	9.00
P-12	29	9.00
P-15	29	9.00
P-16	29	11.40

PHOTO-FLASH		
PF-1	42	\$ 8.40
PF-2	42	8.40
PF-3	42	6.00

REPLACEMENT TYPE		
R-14	41	1.95
R-15	41	1.95
R-16	41	1.95
R-17	41	2.25
R-18	41	2.52
R-19	41	3.00
R-20	41	3.60
R-21	41	3.60
R-34	41	3.00
R-35	41	2.70
R-38A	41	3.30
R-39	41	2.70
R-41	42	5.70
R-42	42	6.00
R-43	42	6.90
R-44	42	8.40
R-45	42	12.00
R-46	42	24.00
R-47	42	9.60
R-48	42	10.50
R-49	42	10.80
R-55	41	1.65
R-58	41	2.70
R-59	41	3.30
R-60	41	3.90
R-64	42	45.00
R-72	42	6.60
R-73	42	9.00
R-74	42	15.00
R-75	42	24.00
R-76	42	42.00
R-77	42	75.00
R-78	42	15.60
R-79	42	18.00
R-80	42	21.00
R-81	42	33.00
R-86	42	33.00
R-97	42	15.00
R-101	41	6.30
R-102	41	7.20
R-103	41	7.80
R-104	41	9.00
R-105	41	11.40
R-106	41	6.60
R-107	41	7.20
R-110	41	6.60
R-111	41	7.20
R-112	41	9.00
R-113	41	13.20

SPECIAL SERIES		
S-1	39	4.80
S-2	39	6.00
S-3	39	4.20
S-5	39	4.80
S-6	39	4.50
S-8	39	6.60
S-9	39	8.40
S-10	39	6.60
S-11	39	5.10
S-12	39	5.40
S-13	39	7.80
S-14	39	6.60
S-15	39	7.20
S-16	39	8.40
S-17	39	9.90
S-18	39	7.20
S-19	39	9.30
S-20	39	15.00
S-21	39	21.00
S-22	39	33.00
S-23	40	4.50

Type	Page	Net
S-24	40	\$ 5.10
S-25	40	3.90
S-26	40	3.90
S-27	40	5.10
S-28	40	6.00
S-29	40	5.10
S-30	40	5.10
S-31	40	6.90
S-32	40	6.90
S-33	40	9.30
S-34	40	9.60
S-35	40	12.00
S-36	40	12.00
S-37	40	15.00
S-38	40	15.00
S-39	40	16.50
S-40	40	18.00
S-41	40	18.00
S-42	40	19.50
S-43	40	30.00
S-44	40	24.00
S-45	40	21.00
S-46	40	24.00
S-47	40	33.00
S-48	40	39.00
S-49	40	36.00
S-50	40	60.00
S-51	40	12.00
S-52	40	15.60
S-53	40	6.00
S-54	40	5.70
S-55	40	5.40
S-57	40	9.00
S-58	40	9.60
S-59	40	9.00
S-60	40	13.20
S-61	40	10.20
S-62	40	9.30
S-63	40	13.20
S-64	40	10.20
S-65	40	9.90
S-67	40	9.90
S-68	40	10.20
S-70	40	10.20
S-71	40	15.00
S-72	40	10.80

SIGNAL		
SC-3	42	7.50
SC-4	42	9.00
SC-5	42	14.40

SUBOUNCER		
SO-1	30	3.00
SO-2	30	3.00
SO-3	30	3.00
SO-4	30	3.00
SO-5	30	3.00
SO-6	30	3.90
SO-7	30	3.00
SO-8	30	3.60
SO-9	30	3.60
SO-10	30	3.60

SUB-SUB OUNCER		
SSO-1	30	4.50
SSO-2	30	4.80
SSO-3	30	3.90
SSO-4	30	3.90
SSO-5	30	3.90
SSO-6	30	3.90
SSO-7	30	3.00
SSO-8	30	3.90
SSO-9	30	3.00
SSO-10	30	3.00
SSO-11	30	3.00
SSO-12	30	3.00
SSO-13	30	4.50

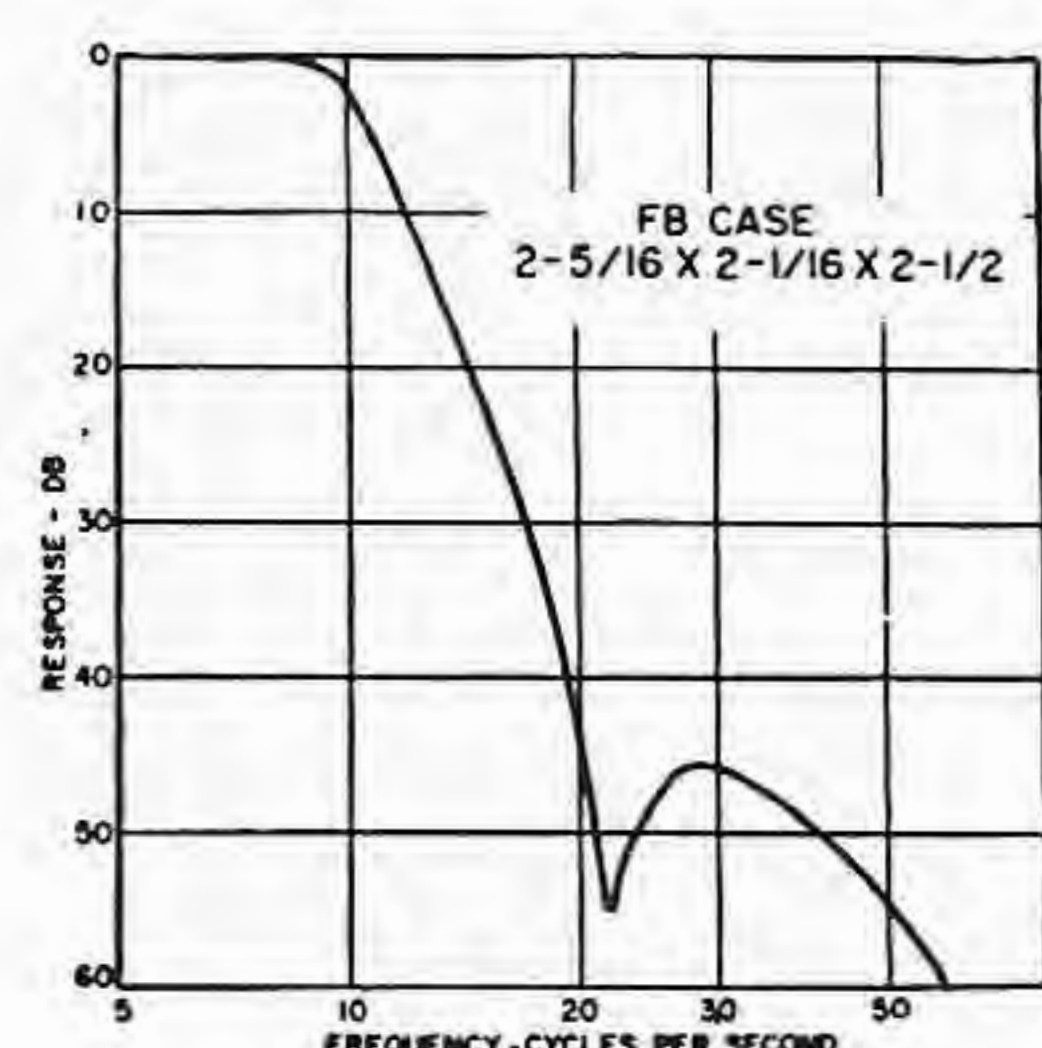
Type	Page	Net
SSO-14	30	\$ 4.80
SSO-15	30	4.80
SSO-16	30	3.00
SSO-17	30	3.90
SSO-18	30	3.90
SSO-19	30	4.20
SSO-20	30	4.20
SSO-21	30	6.00
SSO-22	30	4.80
SSO-23	30	3.00
SSO-24	30	3.00



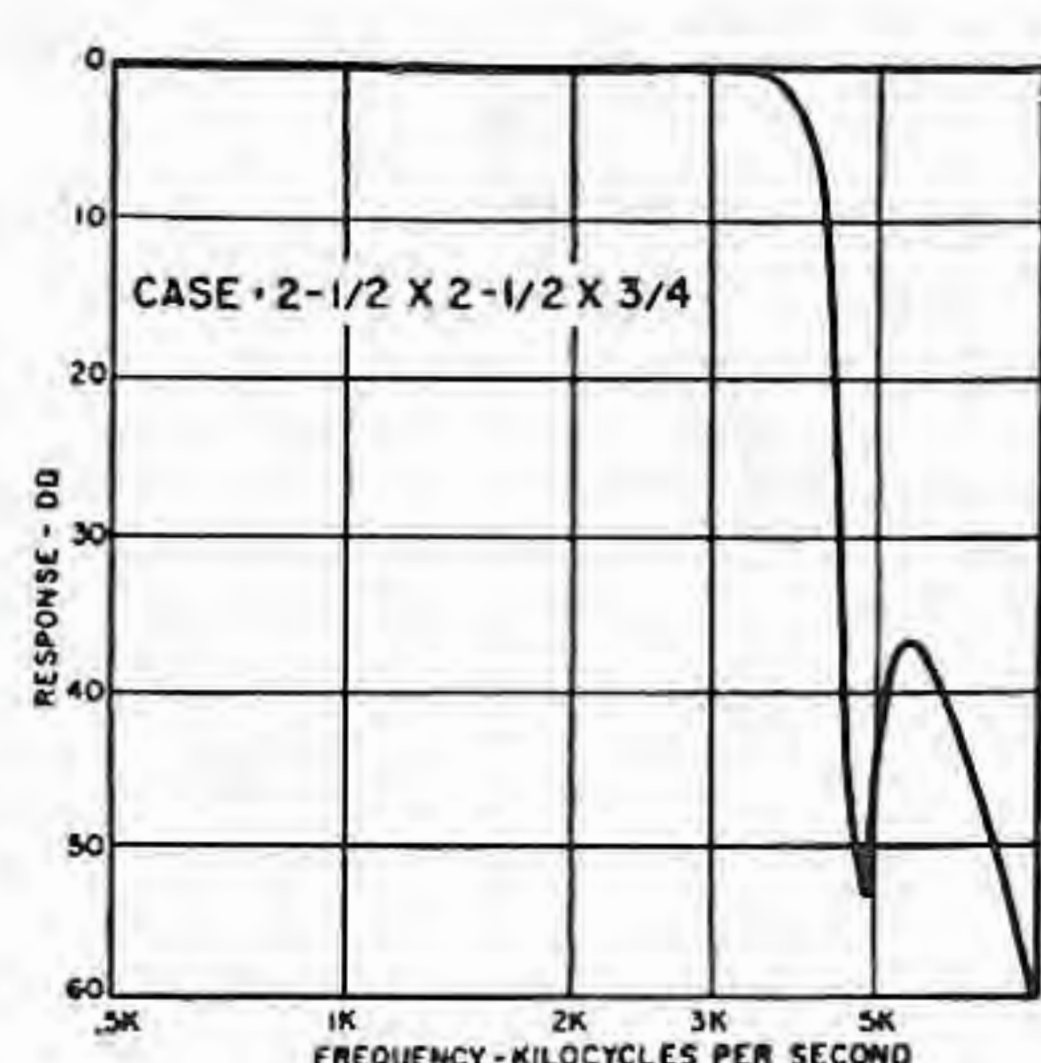
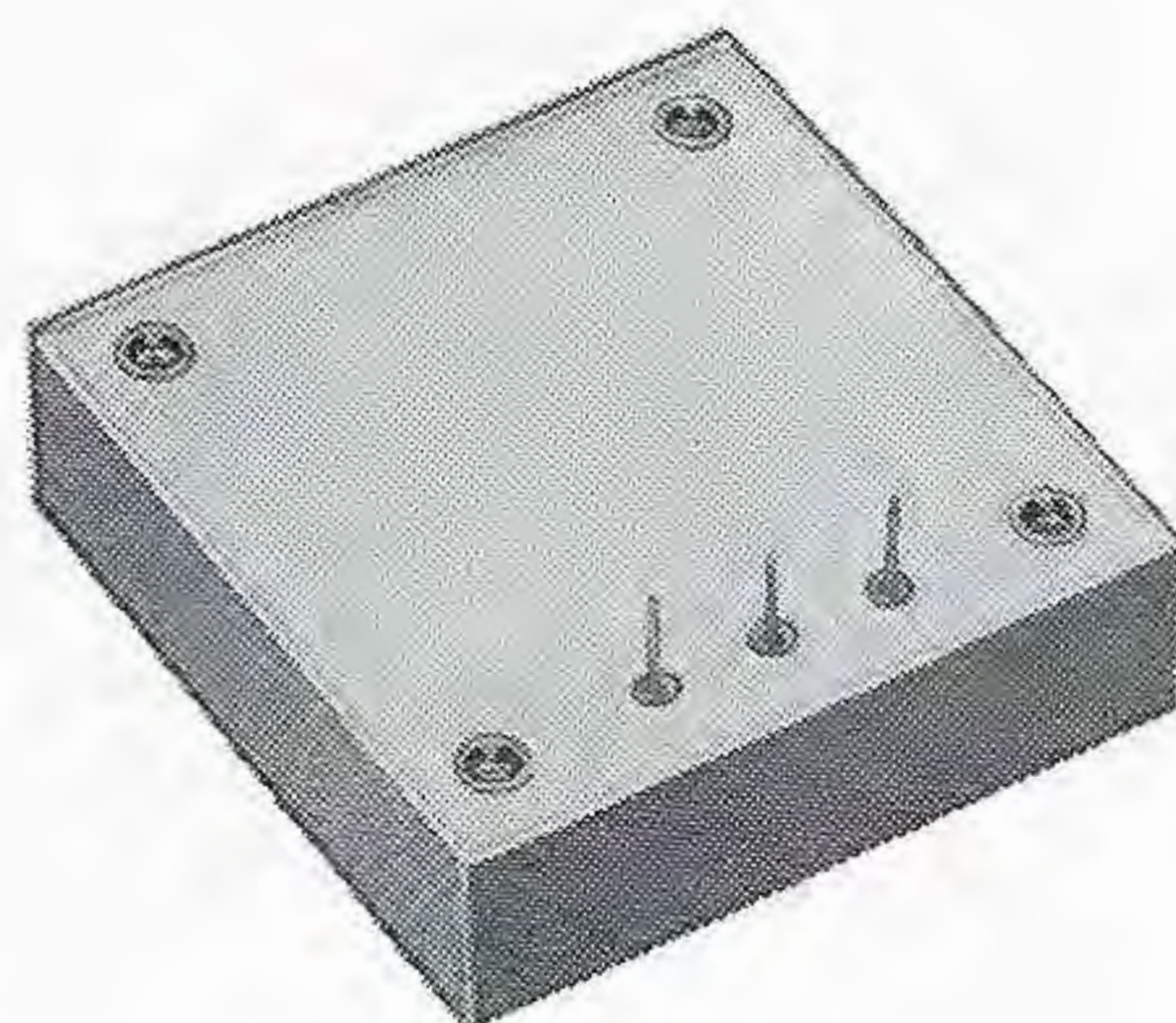
FILTERS TO SPECIFICATIONS

Twenty-five years of experience in the design and production of special filters have resulted in UTC being a first source for difficult units. Present designs incorporate a wide variety of core structures, winding methods, and capacitors to provide maximum performance, stability, and reliability. Stock items

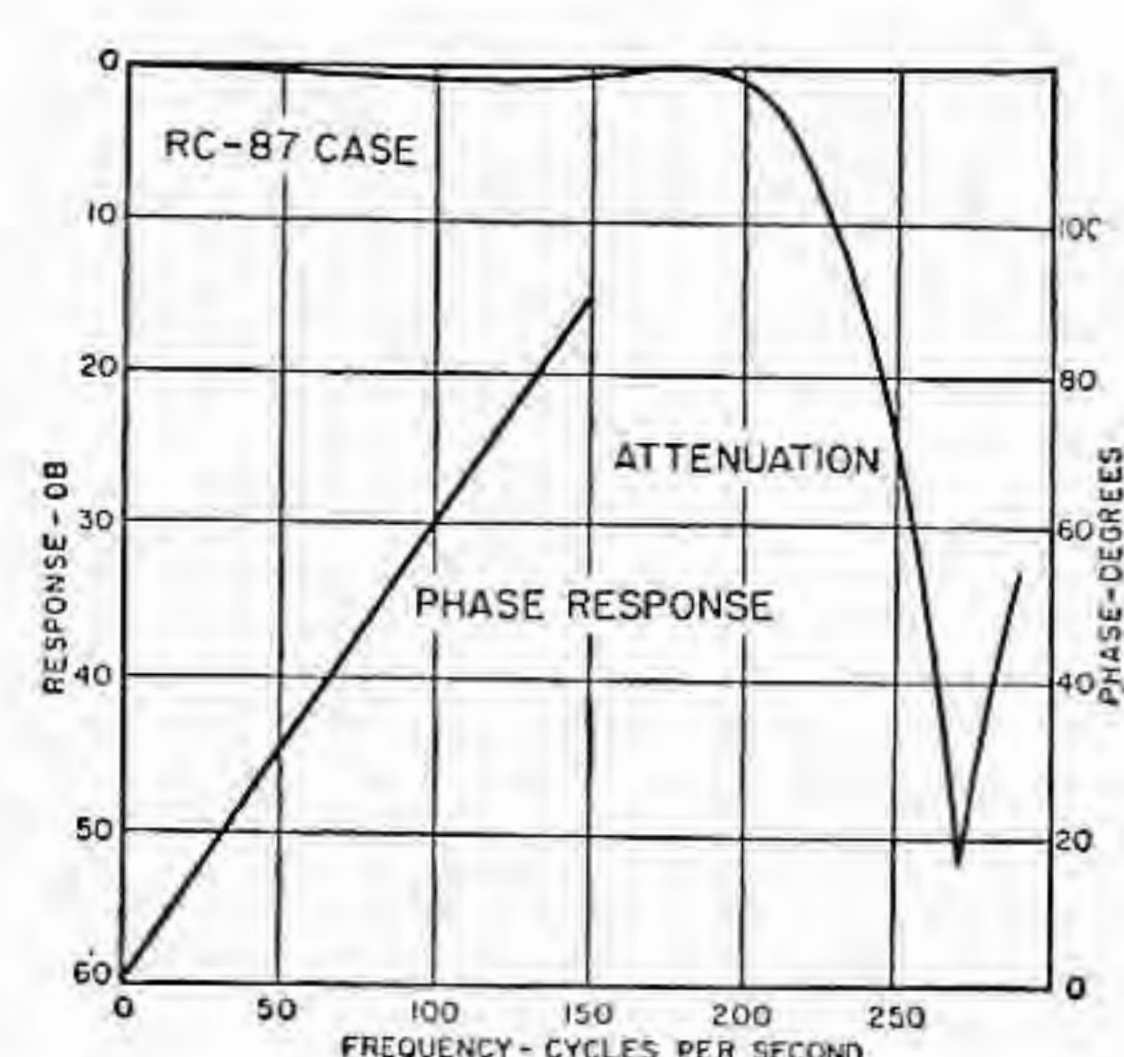
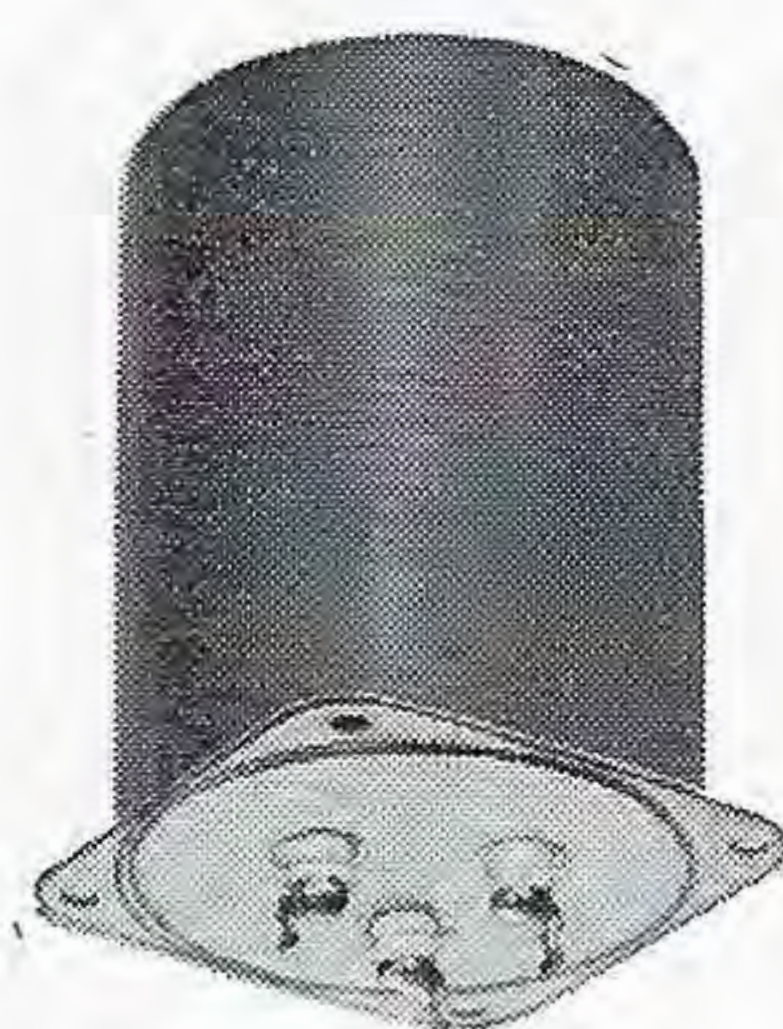
are covered on the following pages. The units illustrated below and on the facing page are intended to show some of the thousands of special units produced by UTC and to provide the equipment engineer with a concept of the possibilities in present special filter units.



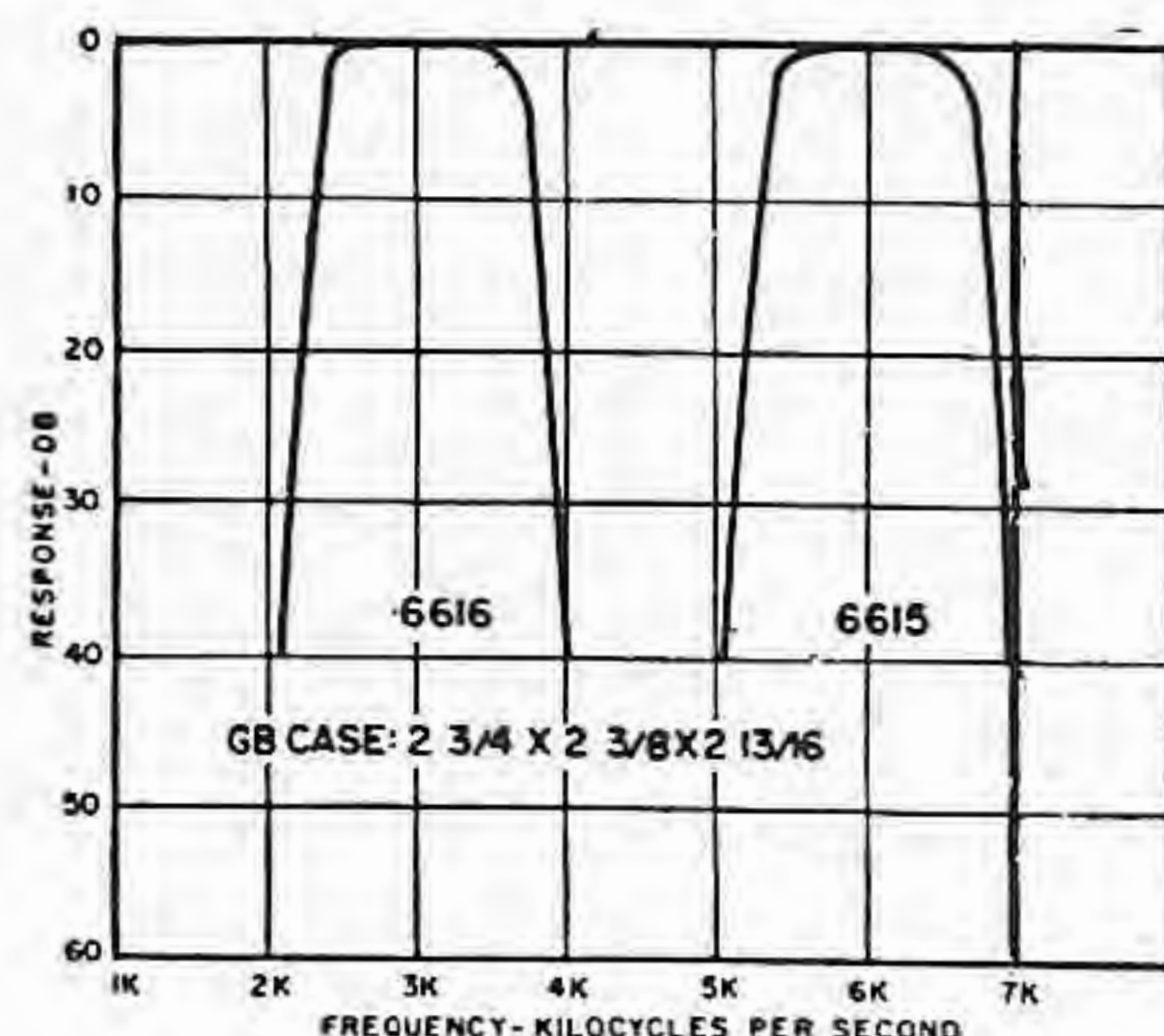
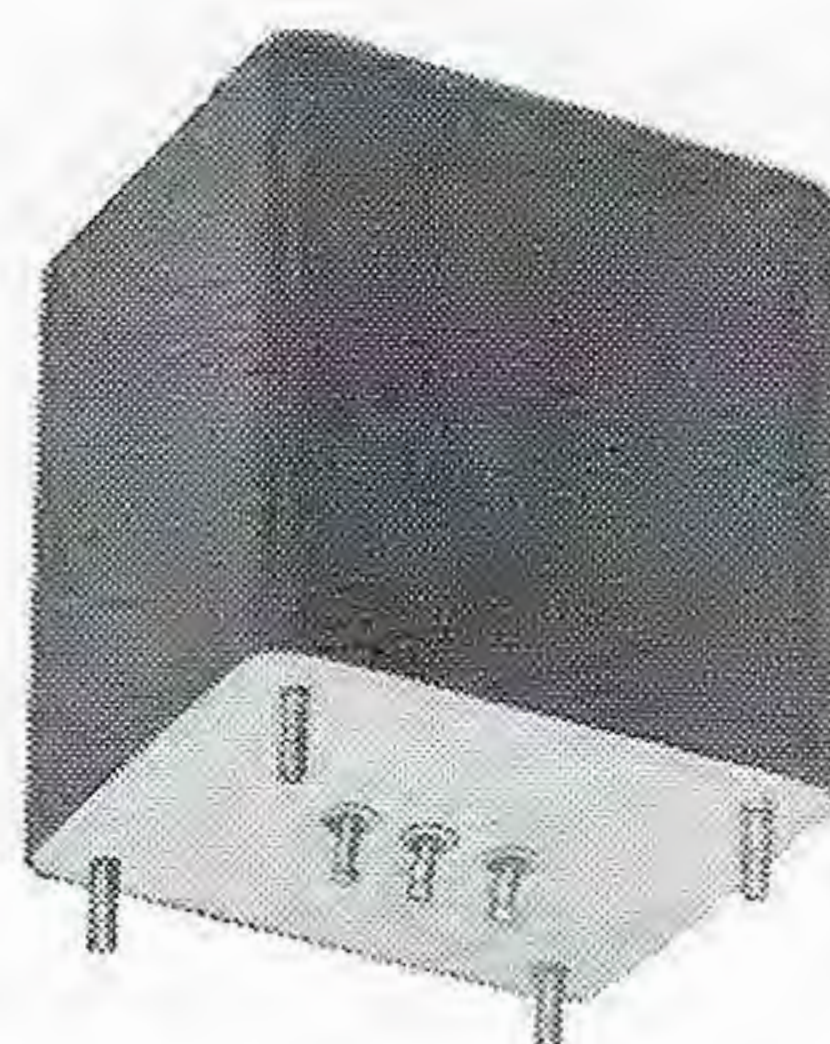
Ten cycles low pass filter. 100K to 200K. Attenuation less than 3 db to 10 cycles, greater than 40 db beyond 2nd harmonic. MIL-T-27A; 1.3 lbs.



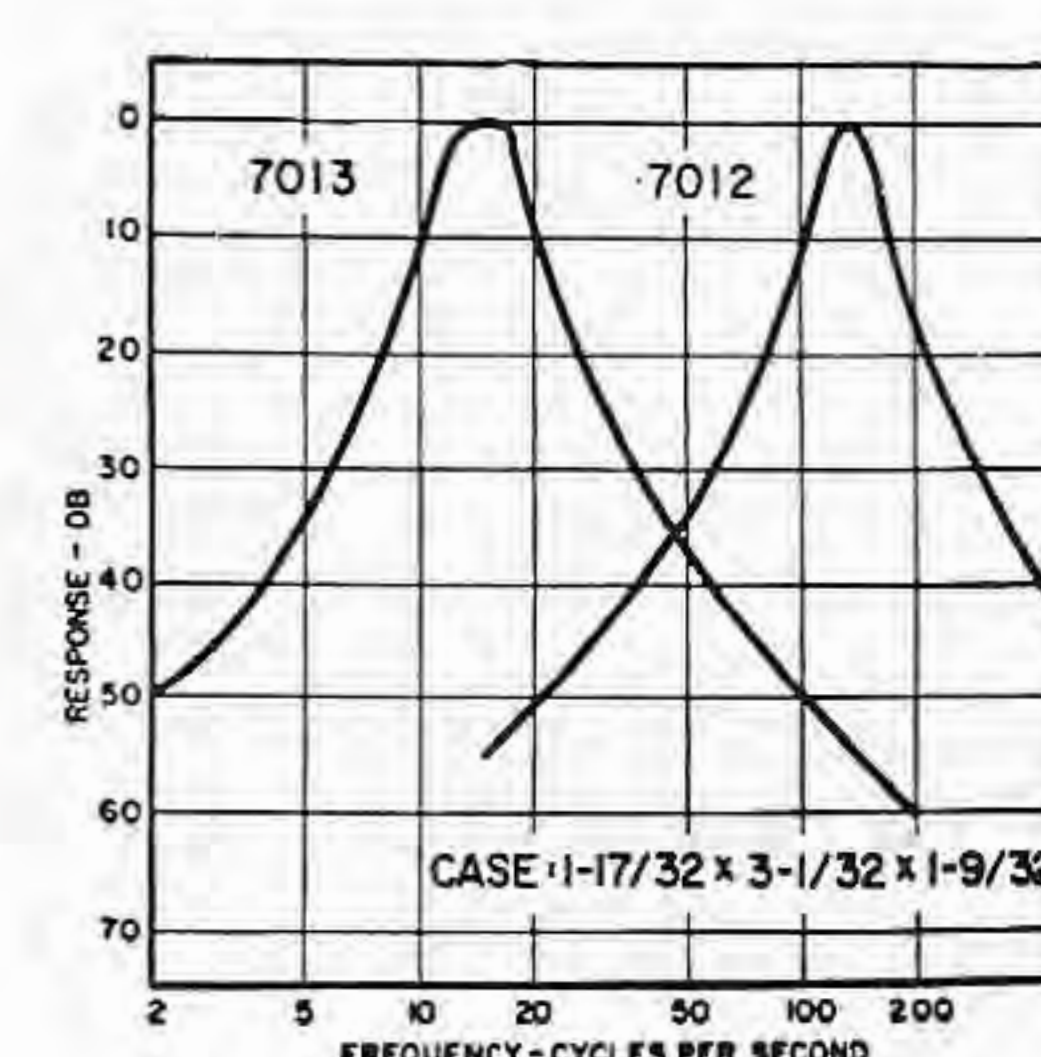
Miniaturized 3500 cycle low pass filter for printed circuitry. 6K to 6K. MIL-T-27A; .5 lbs.



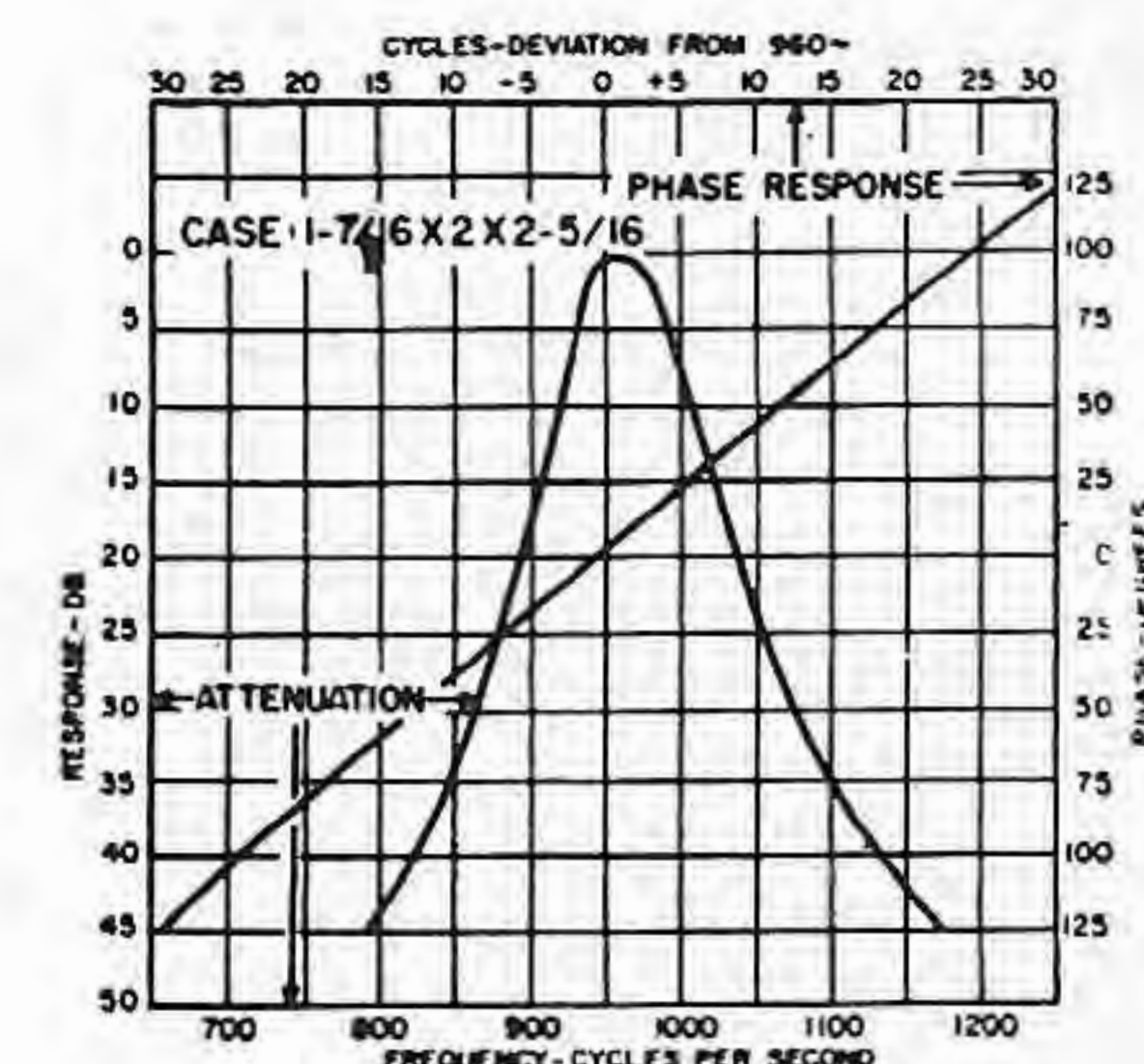
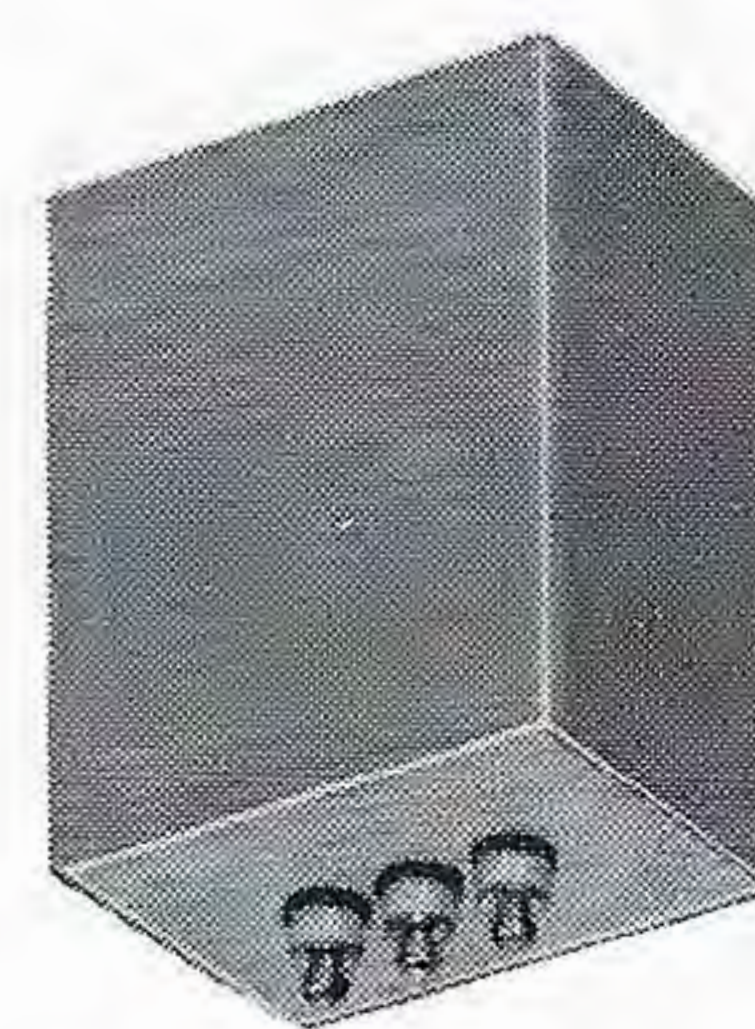
Linear phase slope low pass filter. Within 1 db to 150 cycles, greater than 20 db at 250 cycles. Phase linear to $\pm 2^\circ$. 300 ohms to 15K. MIL-T-27A; 1.5 lbs.



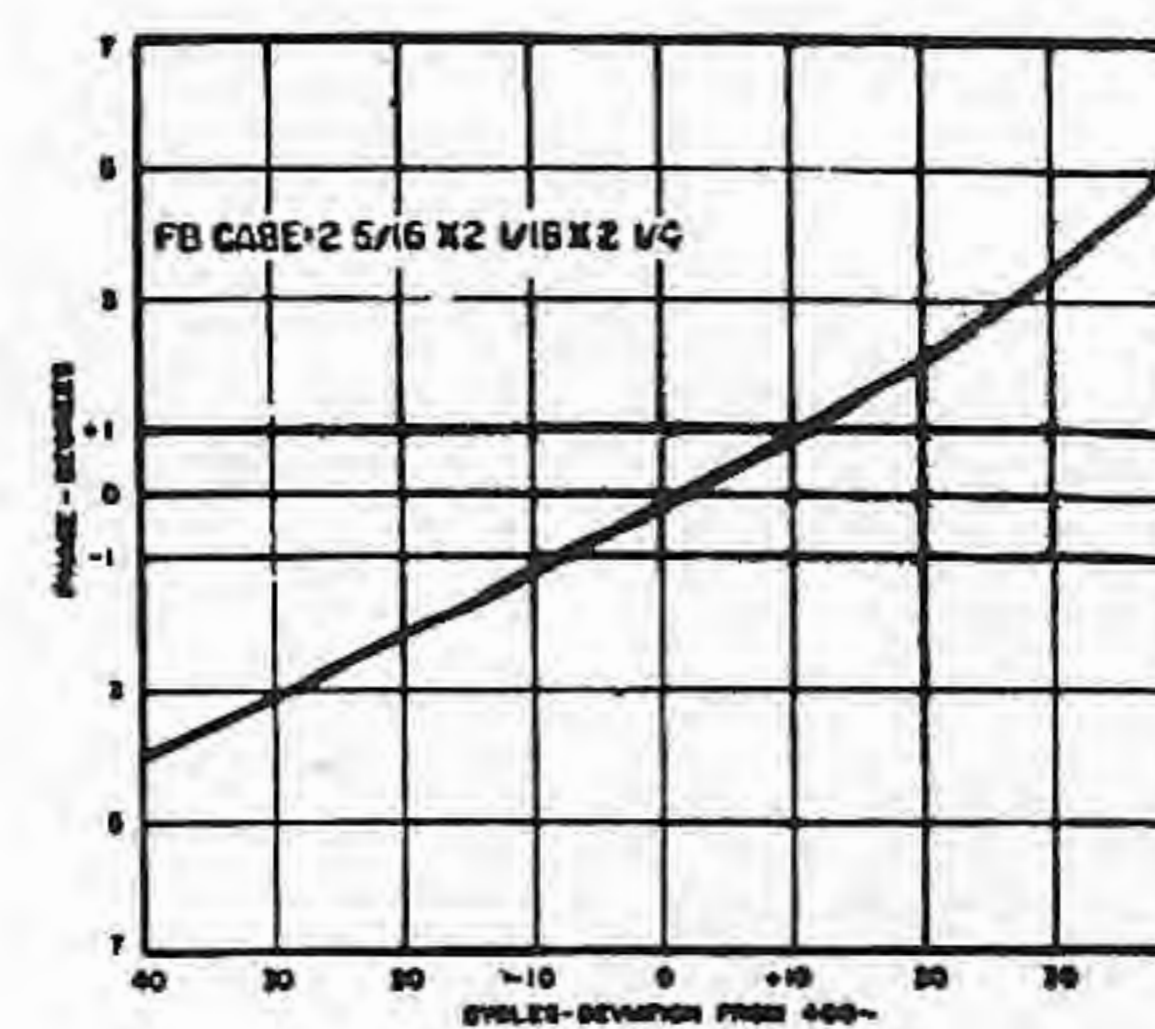
Three KC and 6 KC flat top band pass filters. 400 ohms to 20K. MIL-T-27A; each filter 1.7 lbs.



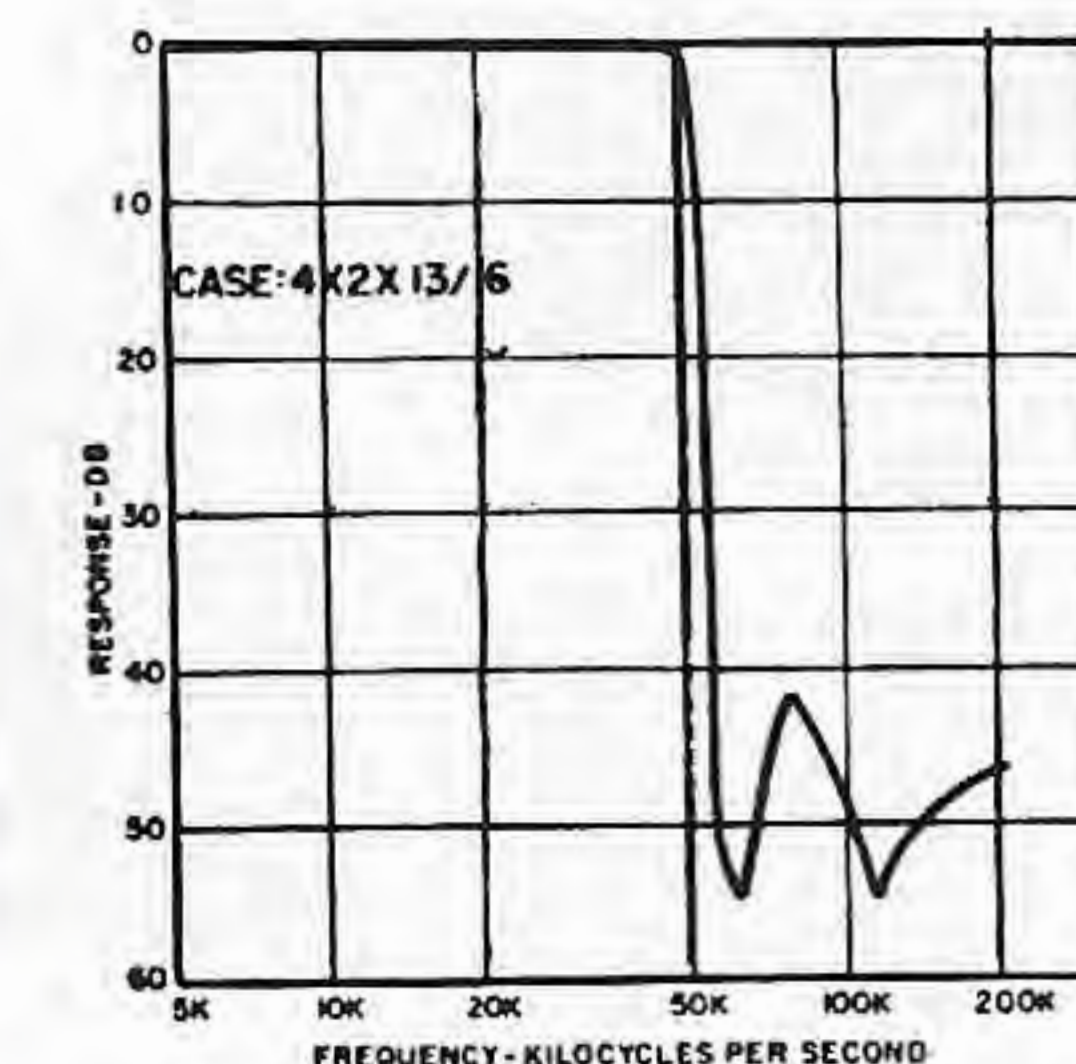
Fifteen cycle and 135 cycle filters for Tacan. 600 ohms to high impedance. Extreme stability -55°C . to $+100^\circ\text{C}$. MIL-T-27A; .75 lbs. Precise 30 cycle transformer for omni-range also supplied.



Linear phase slope 960 cycle band pass filter. 10K to grid. Center frequency within 2 cycles 0°C . to 60°C . MIL-T-27A; .7 lbs.



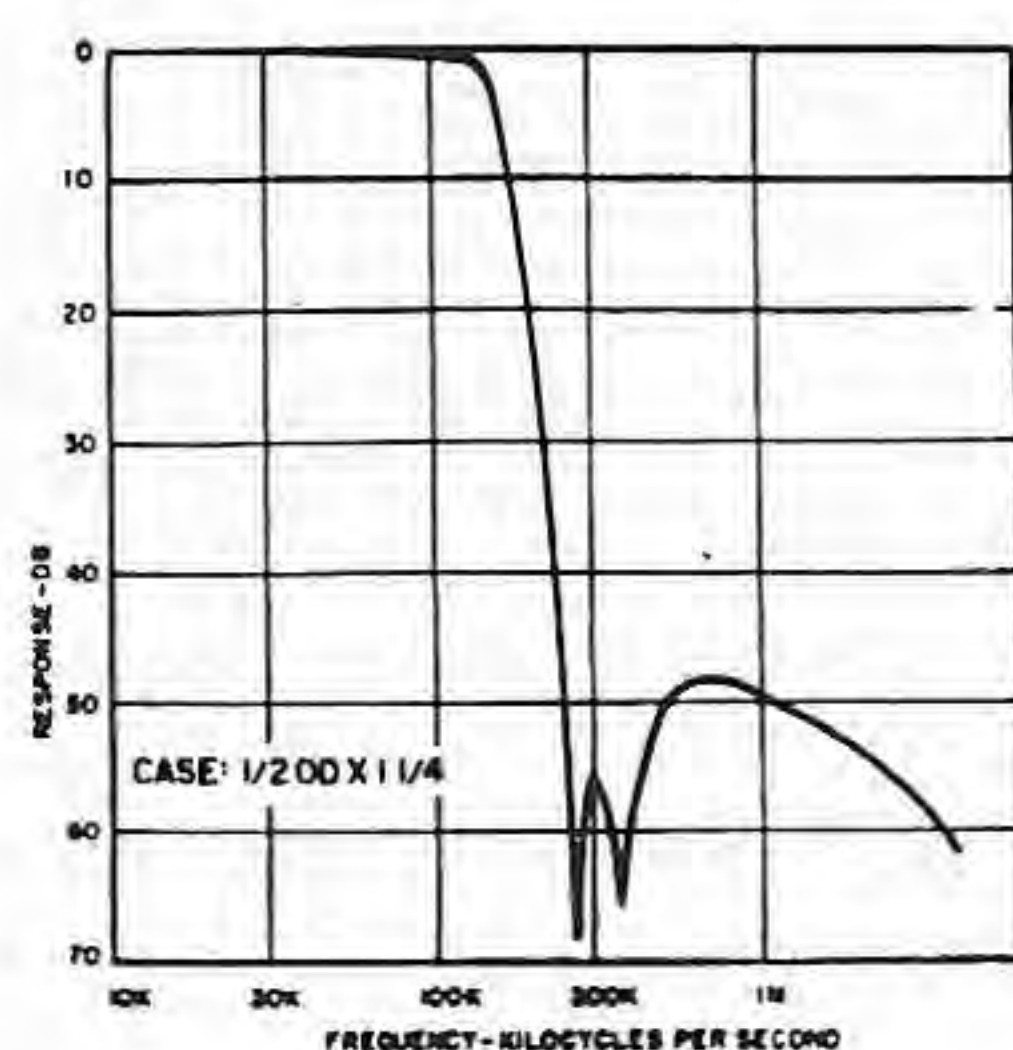
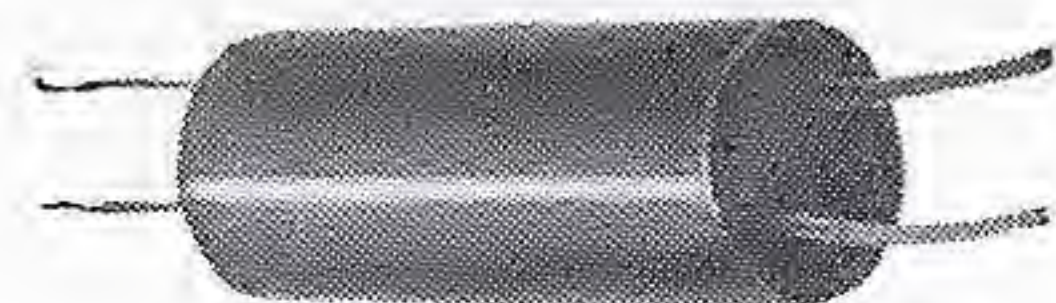
Minimum phase shift 400 cycle band pass filter. Within ± 1.5 db 370 to 430 cycles, greater than 45 db beyond 1100 cycles. 1K to 100K. MIL-T-27A; 1 lb.



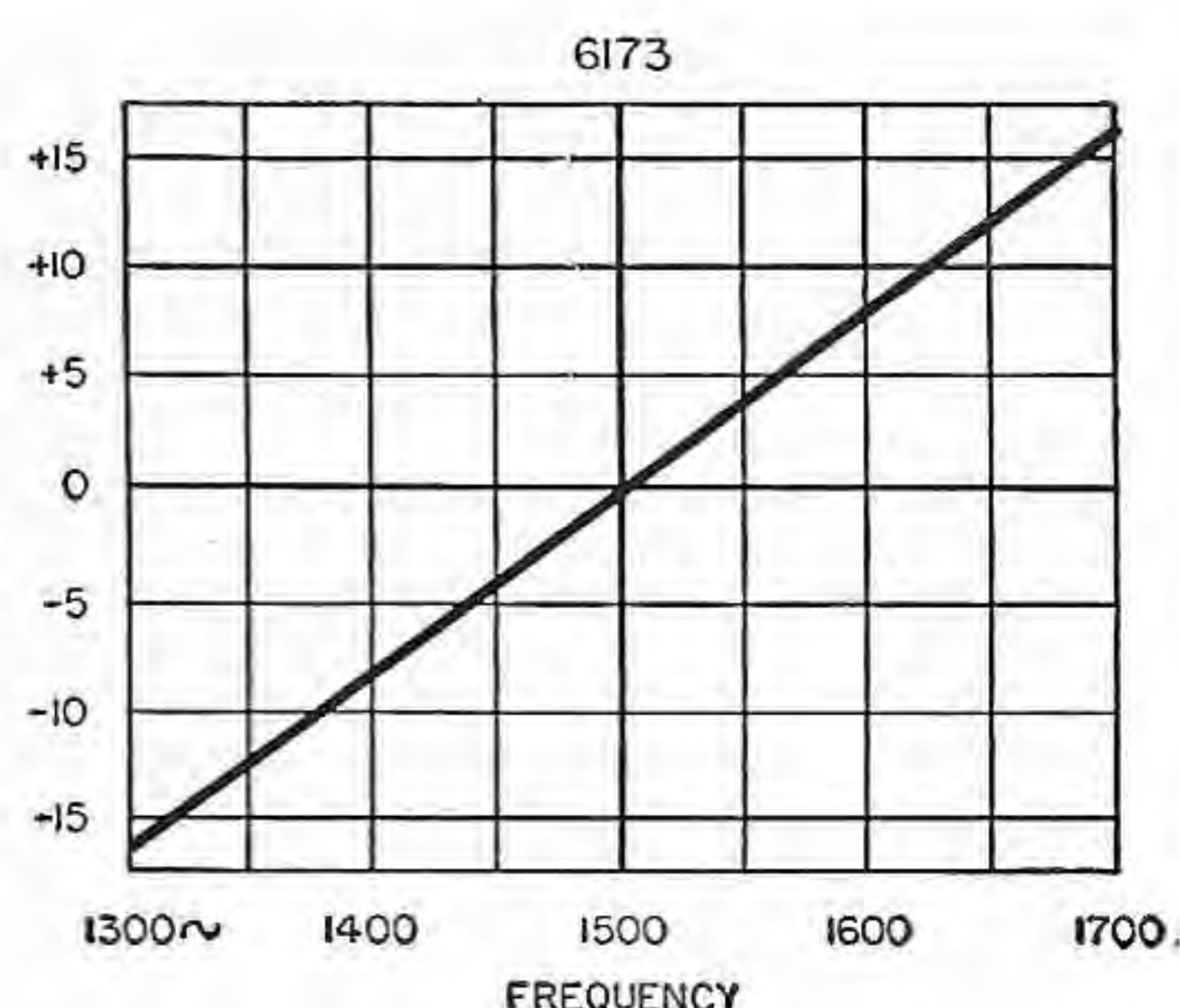
Sharp cutoff 49 KC low pass filter. Stable to .1 db in pass band from 0°C . to 85°C . Within 1 db 5 KC to 49 KC, over 40 db at 56 KC. MIL-T-27A; .6 lbs.



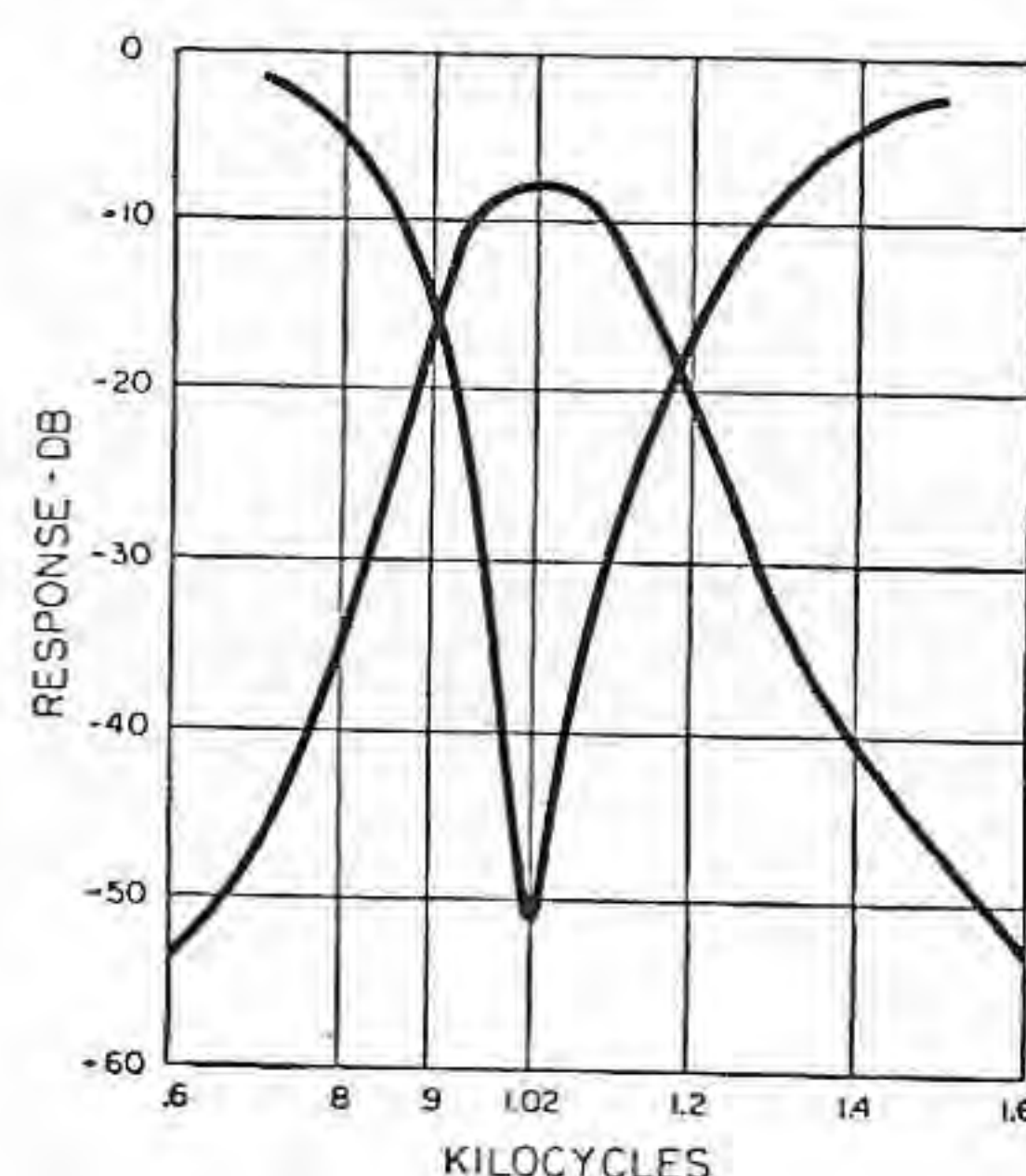
FILTERS TO SPECIFICATIONS



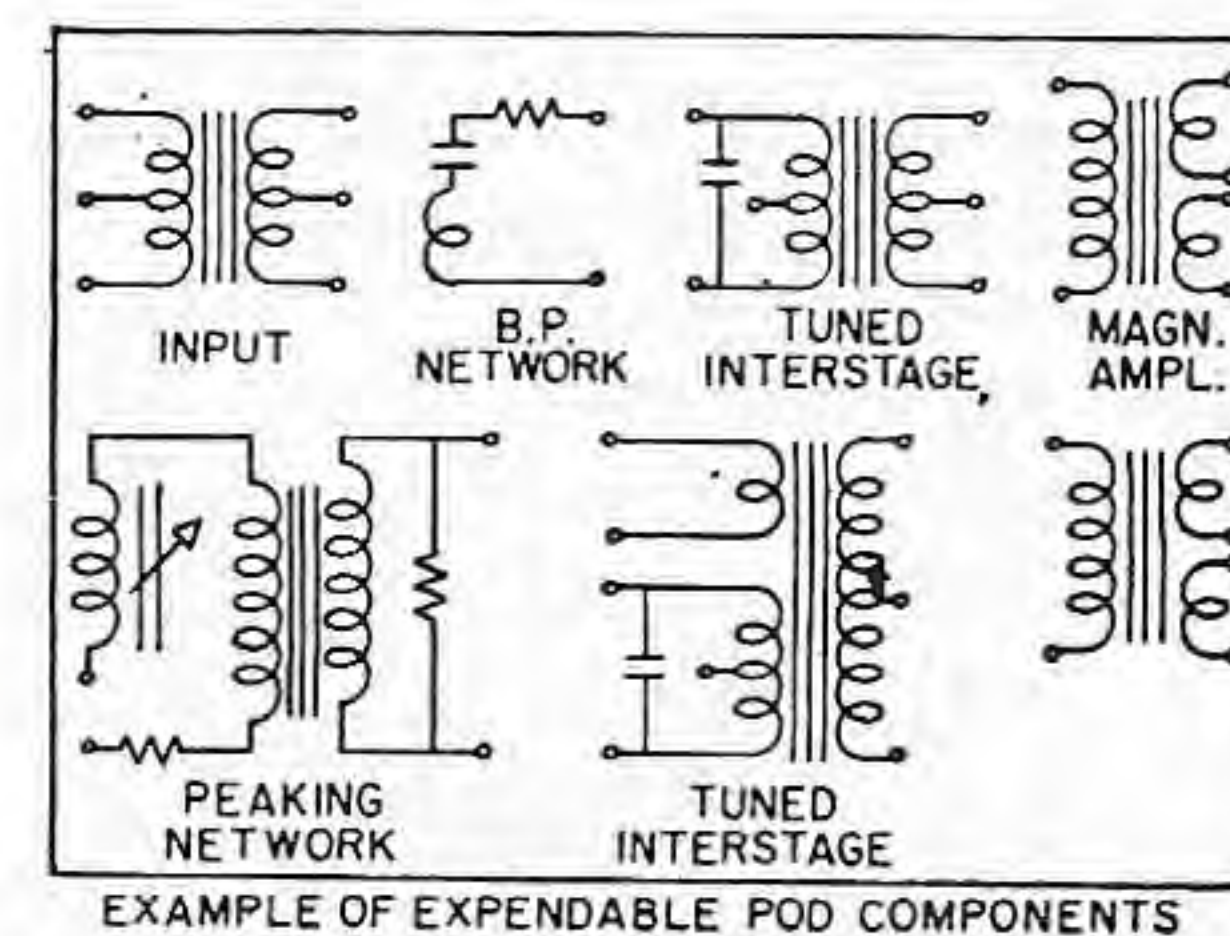
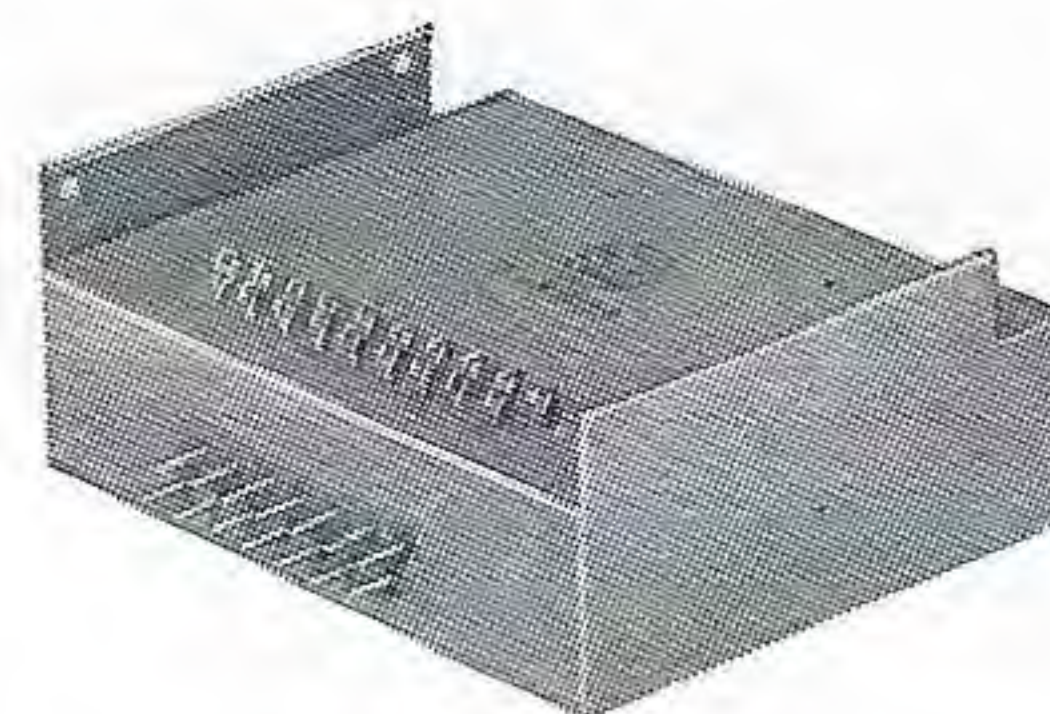
Miniature, molded, 150 KC low pass filter. Within $\frac{1}{2}$ db to 100 KC, 3 db to 150 KC, over 45 db beyond 250 KC. 1500 ohms. MIL-T-27A; .33 oz.



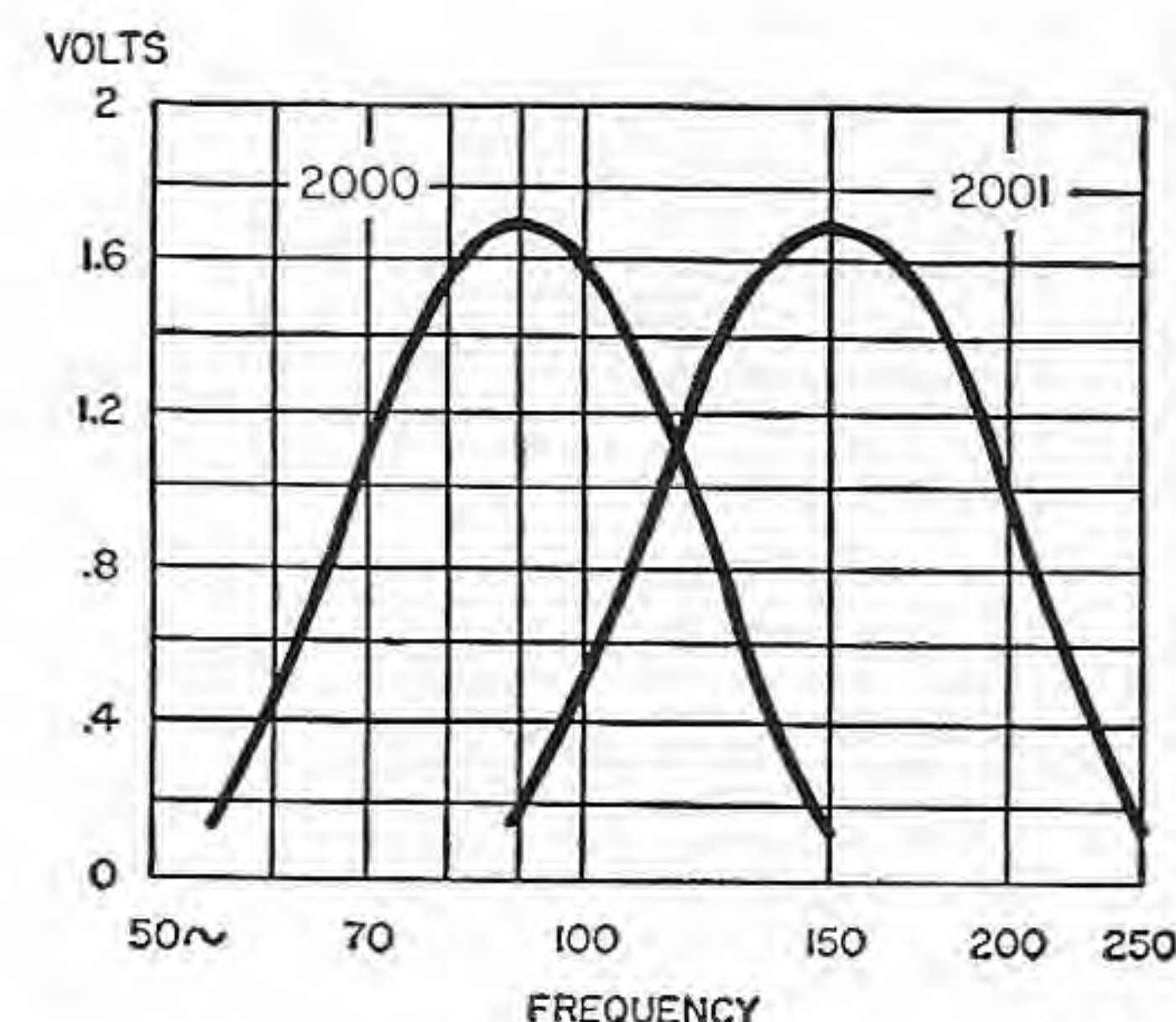
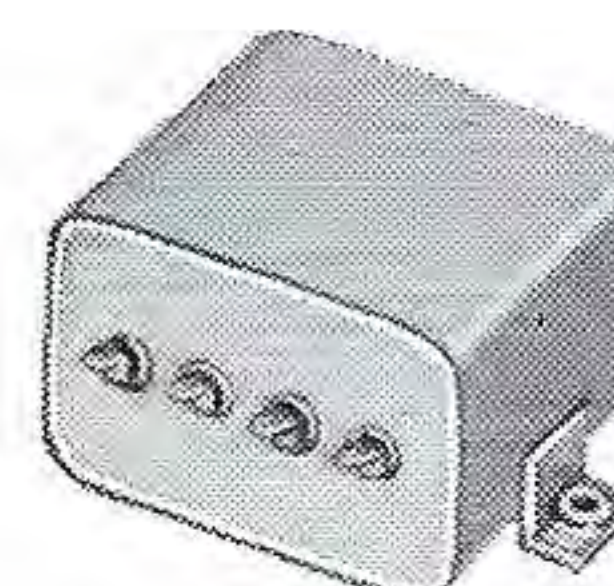
UTC high Q discriminators provide exceptional amplification and linearity. Typical characteristics available are illustrated. Y axis values are volts. $1\frac{1}{16}$ " x $1\frac{3}{8}$ " x 3".



CAA approved RRF-5 aircraft filter serves to separate radio range signals from aural communication.

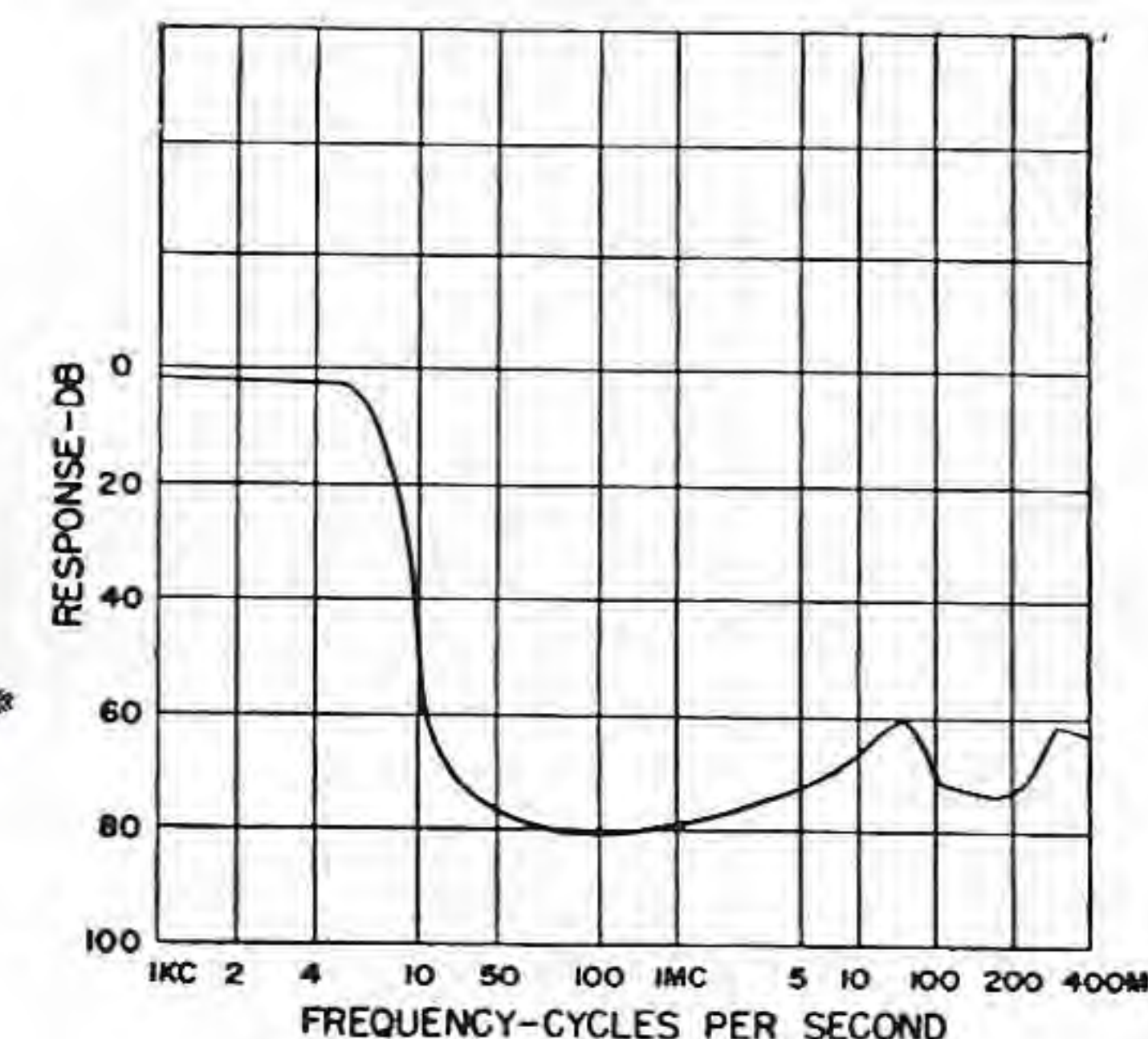


Example of extreme miniaturization by combining (and interconnecting) circuit elements in one case. All eight circuit groups in 3 " x 4 " x $1\frac{1}{4}$ " case, 1.5 lbs.



UTC has produced the bulk of filters used in aircraft equipment.

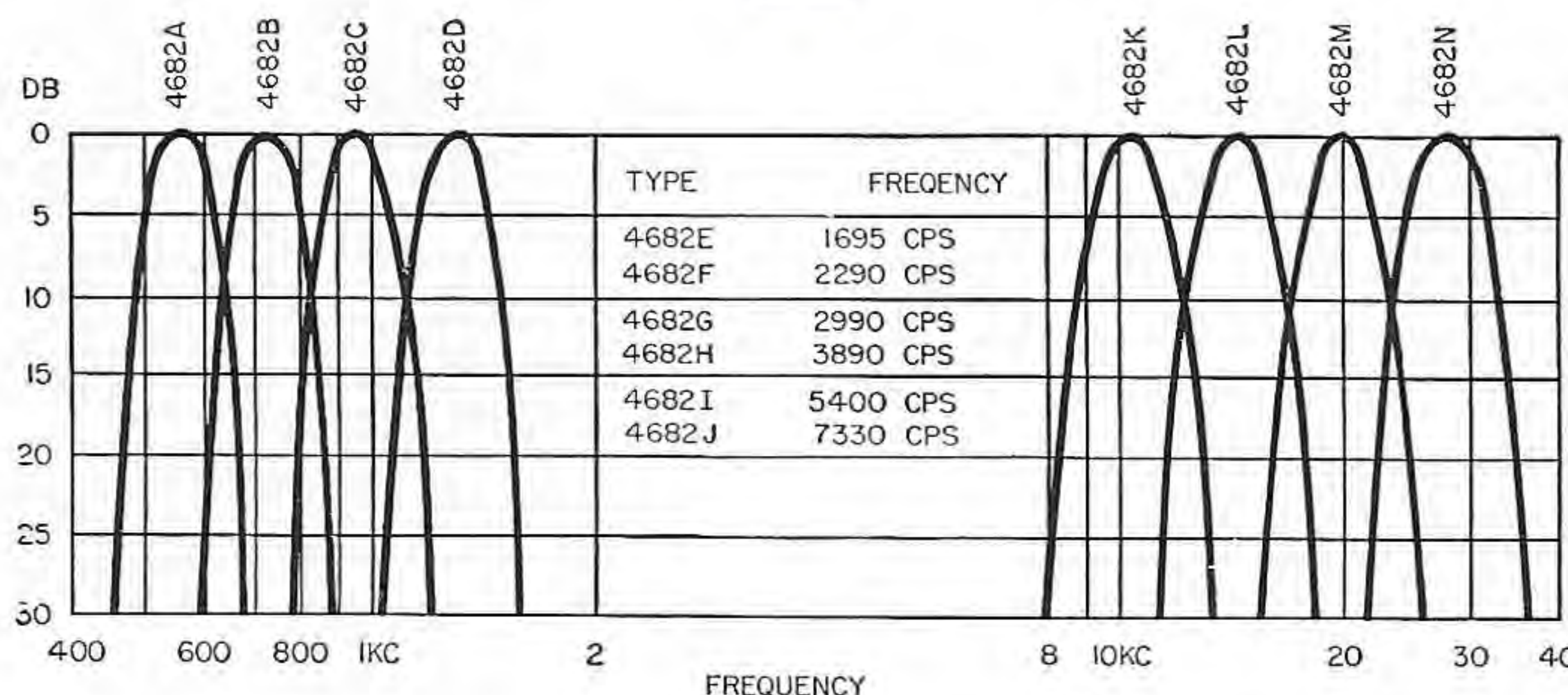
Curves of our miniaturized 90 and 150 cycle filters for glide path systems. $1\frac{1}{4}$ " x $1\frac{3}{4}$ " x $1\frac{5}{8}$ ".



Power line filter from sources of 50 to 400 cycles . . . noise attenuation is from 14 KC to 400 MC . . . 29 cubic inches.

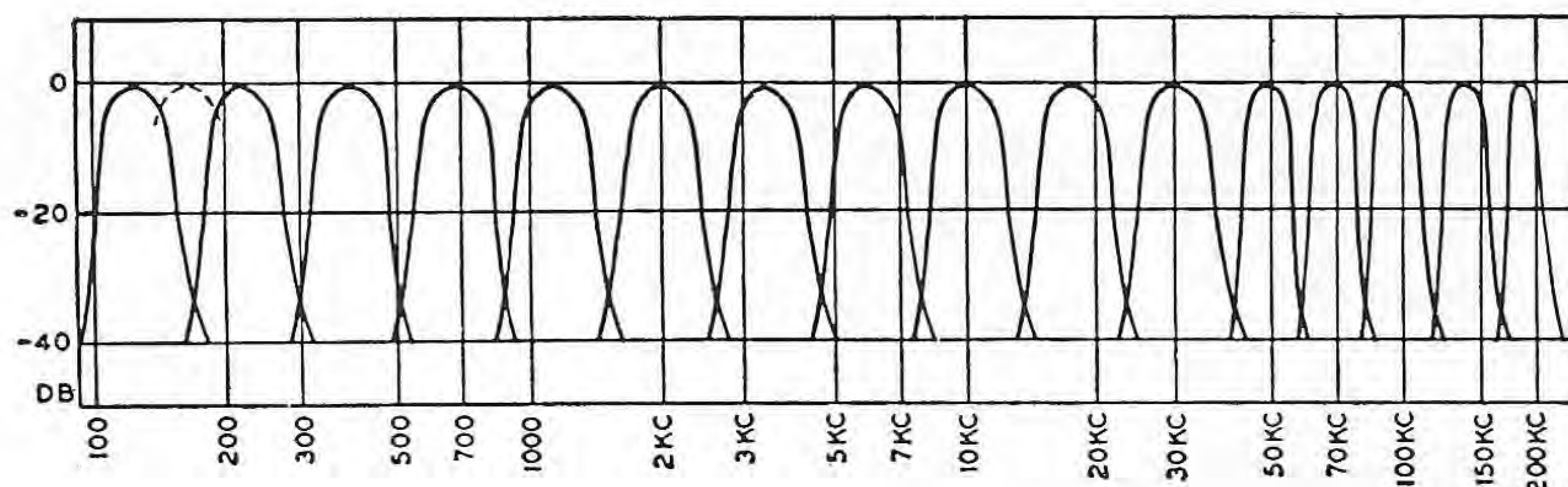
TELEMETERING FILTERS

UTC manufactures a wide variety of band pass filters for multi-channel telemetering. Illustrated are a group of filters supplied for 400 cycle to 40 KC service. Miniaturized units have been made for many applications. For example a group of 4 cubic inch units which provide 50 channels between 4 KC and 100 KC.



Dimensions:
(4682A) $2\frac{1}{2}$ " x $3\frac{1}{8}$ " x $5\frac{1}{2}$ ".

The curve illustrated shows a group of filters affording sixteen separate bands in the audio and supersonic region with 35 db attenuation at the cross-over points. These have also been supplied spaced further apart (40 db cross-over), with intermediate bands, permitting flat top band pass action for any selected range from 100 cycles to 200 KC.





INTERSTAGE and LINE FILTERS

/ Hermetically sealed to MIL-T-27A and MIL-F-18327 Specs., see back cover.

UTC standardized filters have been developed to cover the more common mid-range frequency filter requirements with stock units. All of these standard filters are in compact drawn hermetically sealed cases shielded to reduce hum pick-up. They are divided into six basic types.

The BMI filters are band pass interstage units designed to operate between a vacuum tube plate (or 10,000 ohms) and a grid. They provide a gain of 2 at center frequency. BTI units are same as BMI, but 10,000 ohms output.

BML band pass filters, similarly, work into a grid, but have an input impedance of 500/600 ohms. They provide a gain of 9.

HMI filters are high pass interstage units.

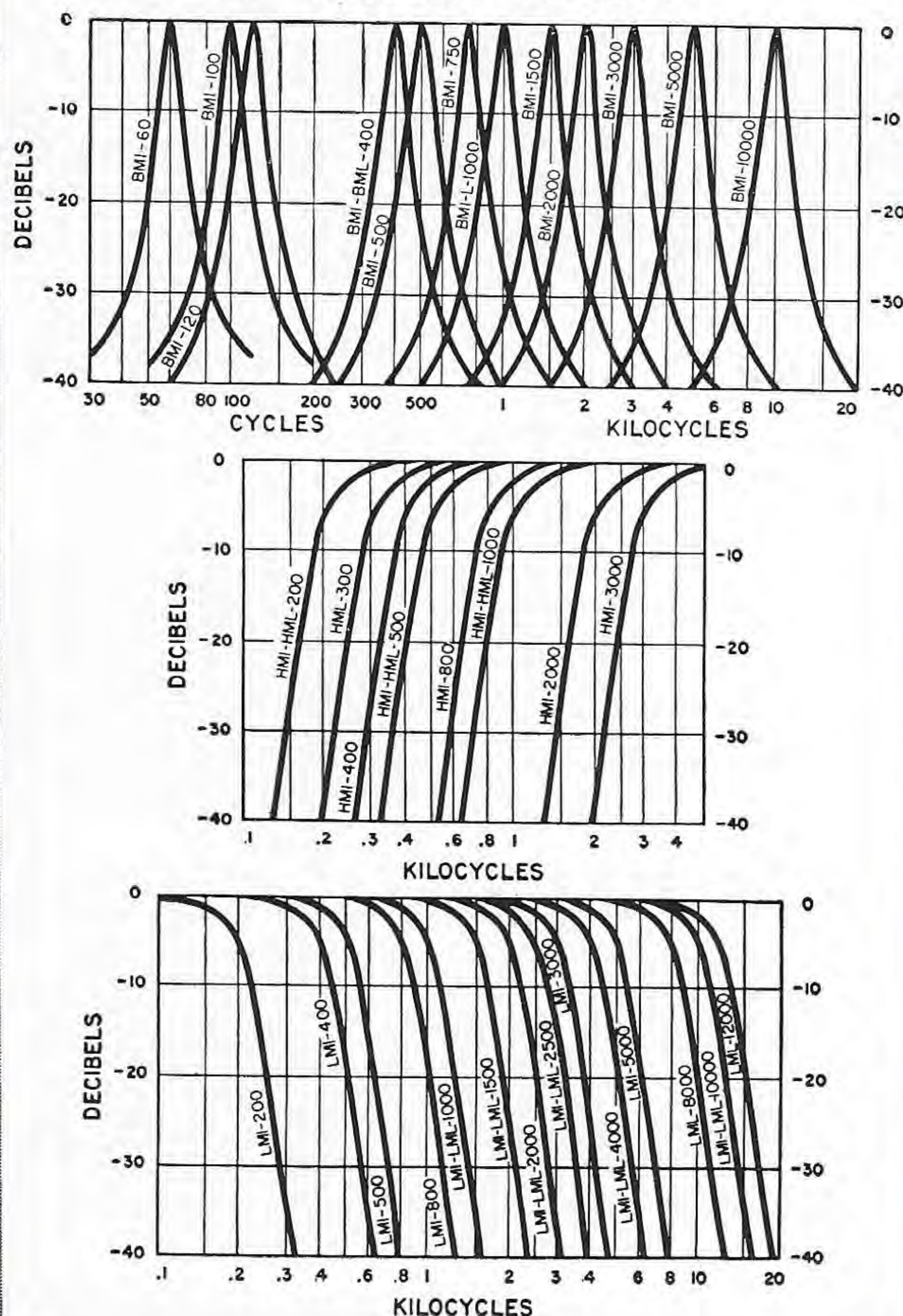
LMI filters are low pass interstage units.

HML filters are high pass with input and output impedance of 500/600 ohms.

LML filters are low pass filters with input and output impedance of 500/600 ohms.

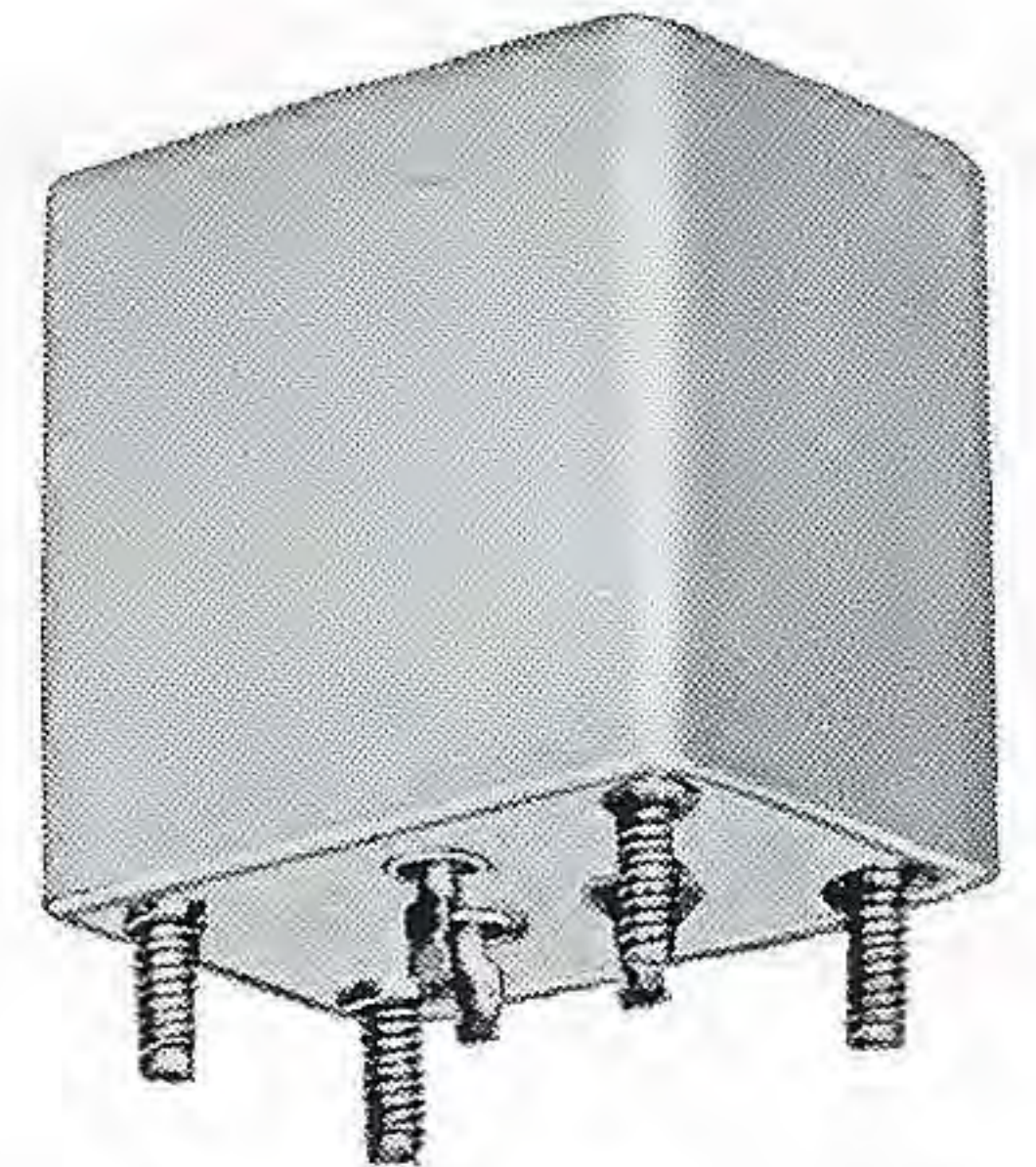
In addition to the stock filters listed, any of the six types are available as special units. BMI, BML, HMI, and HML special filters can be obtained for any frequency from 60 to 12,000 cycles. LMI specials are available from 140 to 12,000 cycles. LML filters are available from 500 to 12,000 cycles. These items are ordered as type followed by frequency, for example, LMI-2800 would designate a low pass interstage filter with 2800 cycle cut-off frequency. These special units are priced at \$48.00 net.

TYPICAL RESPONSE CURVES OF STANDARD FILTERS



FILTER CASE M

Base	1 1/8 x 1 1/8"
Mtg.	3/4 x 1 1/4"
Mtg. Studs (stainless).....	6-32
Cutout	7/8" dia.
Height, BMI, LMI, BML.....	1 5/8"
Height, HMI, HML, LML.....	2 1/2"
Weight	6 oz. and 9 oz.



STANDARD FILTERS . . . STOCK FREQUENCIES

BMI units (Band Pass) have 2:1 gain. They are sharply peaked, having approximately 2 db attenuation at plus or minus 3% from center frequency and attenuation of 40 db per octave as shown. Input 10,000 ohms, output to grid.

BTI are same as BMI but with 10,000 ohms output for transistor applications.

HMI units (High Pass) have a loss of less than 6 db at cutoff frequency, and an attenuation of 35 db at .67 cutoff frequency. Input and output 10,000 ohms.

LMI units (Low Pass) have a loss of less than 6 db at cutoff frequency, and an attenuation of 35 db at 1.5 cutoff frequency. Input and output 10,000 ohms.

HML (High Pass) and LML (Low Pass) filters are similar to the interstage filters, in all characteristics, except that they are intended for an input and output impedance of 500/600 ohms.

BML (Band Pass) have input of 500/600 ohms, output to grid.

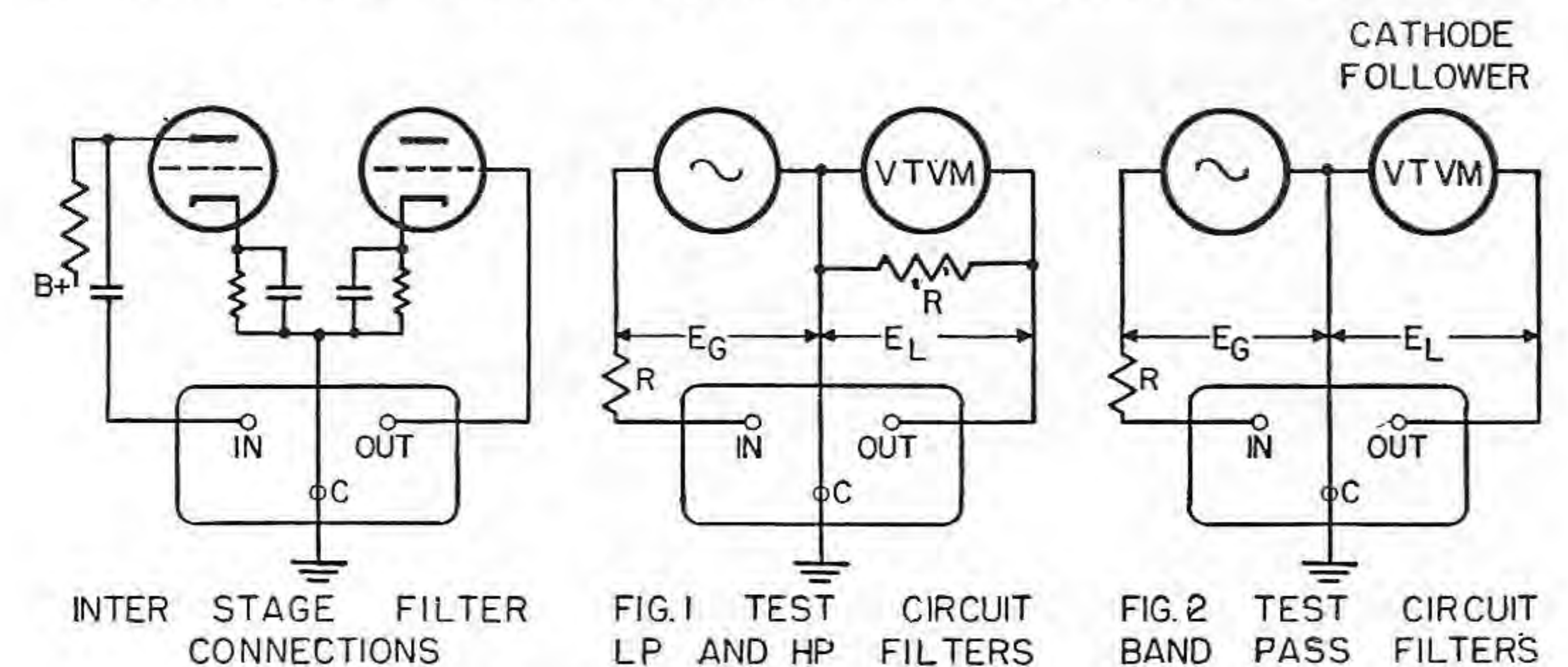
BMI-60	BTI-60	LMI-500	HML-200
BMI-100	BTI-100	LMI-800	HML-300
BMI-120	BTI-120	LMI-1000	HML-500
BMI-400	HMI-200	LMI-1500	HML-1000
BMI-500	HMI-400	LMI-2000	LML-1000
BMI-750	HMI-500	LMI-2500	LML-1500
BMI-1000	HMI-800	LMI-3000	LML-2000
BMI-1500	HMI-1000	LMI-4000	LML-2500
BMI-2000	HMI-2000	LMI-5000	LML-4000
BMI-3000	HMI-3000	LMI-10000	LML-8000
BMI-4000	LMI-200	BML-400	LML-10000
BMI-5000	LMI-400	BML-1000	LML-12000
BMI-10000			

FILTER TESTS

LMI and LML Filters are tested as per Fig. 1 with R equal to 10,000 ohms for LMI and 500/600 ohms for LML. E_g is held constant and E_L obtained at 1/5th cut-off frequency is used as zero on curve. E_L at other frequencies is then plotted in db.

HMI and HML Filters are tested as per Fig. 1 with R equal to 10,000 ohms for HMI and 500/600 ohms for HML. E_g is held constant and E_L obtained at five times cut-off frequency is used as zero on curve. E_L at other frequencies is then plotted in db.

BMI and BML are tested as per Fig. 2 with R equal to 10,000 ohms for BMI and 500/600 ohms for BML. Output is to unloaded grid. E_g is held constant and E_L obtained at center frequency is used as zero on curve (this is twice E_g for BMI's, nine times E_g for BML's). E_L at other frequencies is then plotted on db.





MINIFILTERS

Hermetically sealed to MIL-T-27A and MIL-F-18327 Specs., see back cover.

The UTC stock interstage filters on the opposite page have been an industry standard for over a decade. The new UTC miniature filters provide almost the same characteristics in an extremely miniaturized package. Attenuation of these miniature filters is only slightly less than their larger counterparts, as is operating level. Special filters can be supplied for any frequency above the minimum shown for each group, at \$48.00 net. Straight pin terminals are provided for printed or standard circuits.

BPM units (band pass) have 2:1 gain. Attenuation is approximately 2 db $\pm$ 3% from center frequency, and 35 db per octave as shown. Input 10,000 ohms, output to grid, tapped for 10,000 ohms output to provide flexibility in transistor circuits. For tube circuits continuity is on grid side, for transistor use continuity is on input side.

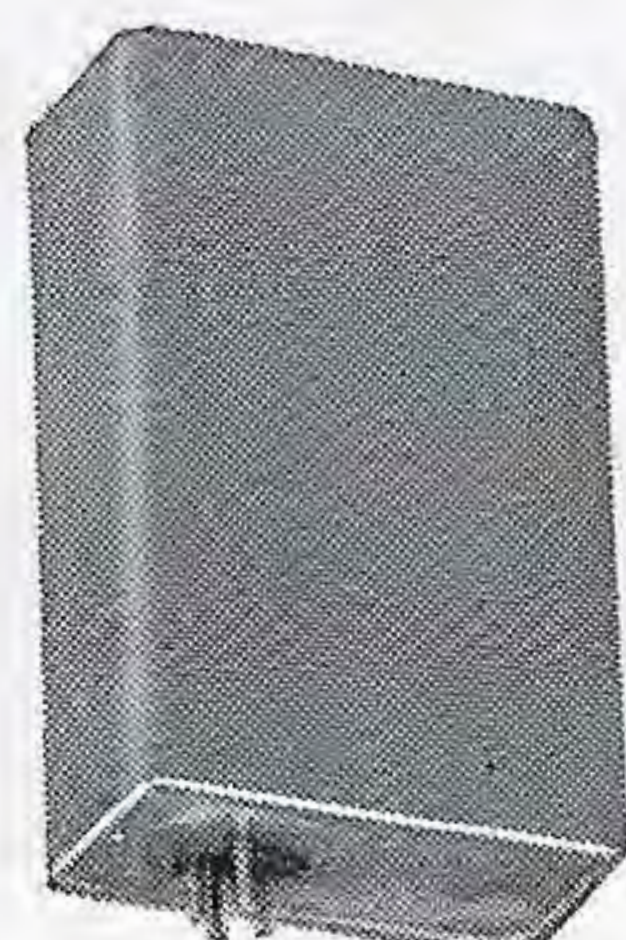
HPM units (high pass) have a loss of less than 6 db at cutoff frequency, and an attenuation of 30 db at .67 cutoff frequency, 40 db at .6 cutoff frequency. Input and output 10,000 ohms.

LPM units (low pass) have a loss of less than 6 db at cutoff frequency, and an attenuation of 30 db at 1.5 cutoff frequency, 40 db at 1.65 cutoff frequency. Input and output 10,000 ohms.



TELEMETERING BAND PASS FILTERS

Hermetically sealed to MIL-T-27A and MIL-F-18327 Specs., see back cover.



**TMN-4 thru
TMN-1.7**
1 1/16 x 1 1/2 x 2"
Weight.....3.5 oz.



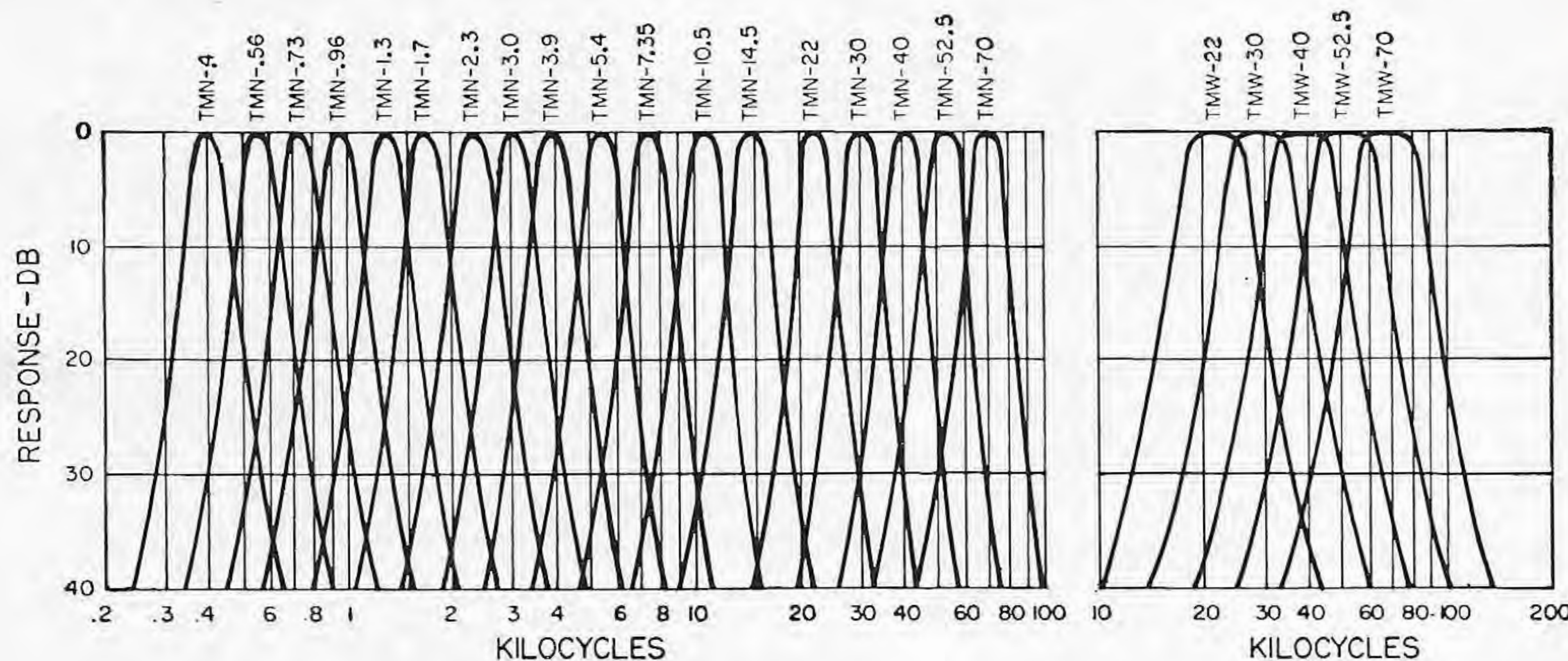
**TMN-2.3 thru
TMW-70**
2 3/32 x 2 3/32 x 1 3/8"
Weight.....1.2 oz.

UTC manufactures a wide variety of special filters for channel separation. One special group of noise analysis filters, for example, provides 50 channels between 4 KC and 100 KC in a total volume of 200 cubic inches. The standard group of UTC telemetering filters described below incorporates extreme miniaturization with maximum stability, a complete set of 18 filters taking a volume of approximately 19 cubic inches. Both TMN and TMW types are designed for 100K input and output impedance and have an insertion loss of less than 6 db. Four pin hermetic header matches small Winchester socket.

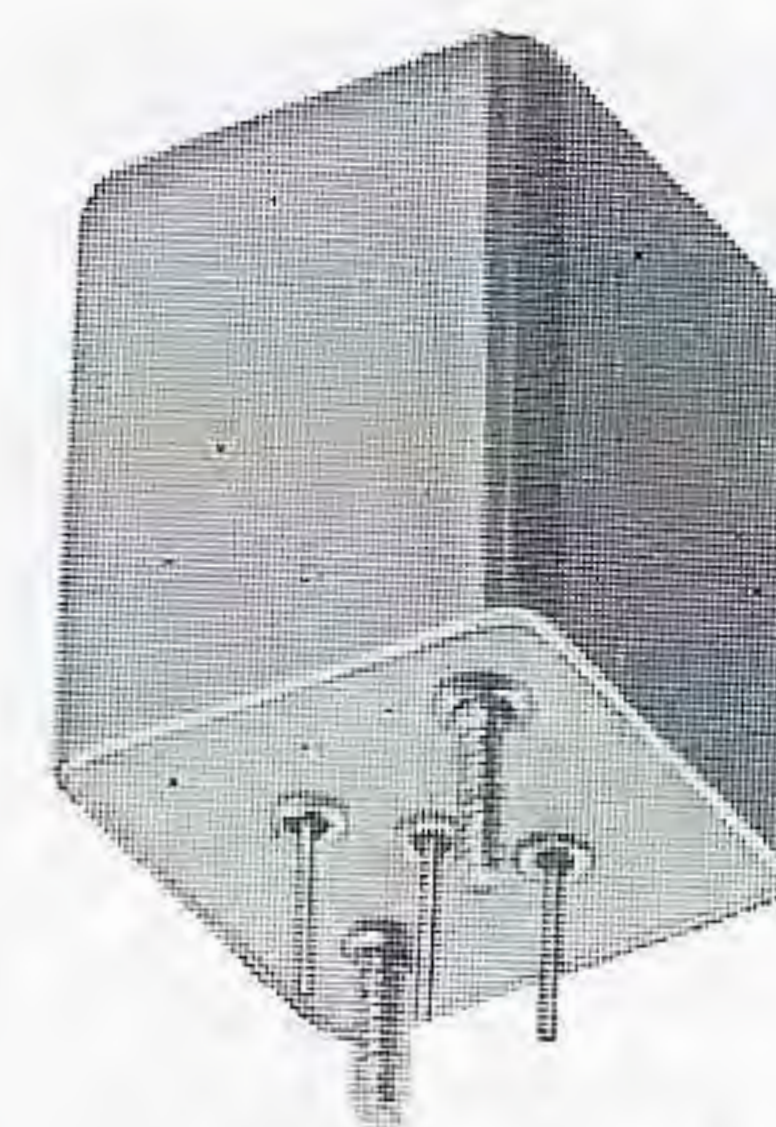
TMN filters are down less than 3 db at $\pm$ 7.5% of center frequency. They are down more than 18 db at $\pm$ 25% of center frequency. Attenuation is greater than 40 db beyond 1.75 F_c and .58 F_c .

TMW filters are down less than 3 db at $\pm$ 15% of center frequency. They are down more than 20 db at $\pm$ 50% of center frequency. Attenuation is greater than 40 db beyond 2.5 F_c and .4 F_c .

TYPICAL RESPONSE CURVES OF STANDARD TM FILTERS



Type No.	Center Frequ'cy KC	Band Width $\pm$	Type No.	Center Frequ'cy KC	Band Width $\pm$	Type No.	Center Frequ'cy KC	Band Width $\pm$
TMN-.4	.4	7 1/2 %	TMN- 3.9	3.9	7 1/2 %	TMN-52.5	52.5	7 1/2 %
TMN-.56	.56	7 1/2 %	TMN- 5.4	5.4	7 1/2 %	TMN-70	70	7 1/2 %
TMN-.73	.73	7 1/2 %	TMN- 7.35	7.35	7 1/2 %	TMW-22	22	15 %
TMN-.96	.96	7 1/2 %	TMN-10.5	10.5	7 1/2 %	TMW-30	30	15 %
TMN-1.3	1.3	7 1/2 %	TMN-14.5	14.5	7 1/2 %	TMW-40	40	15 %
TMN-1.7	1.7	7 1/2 %	TMN-22	22	7 1/2 %	TMW-52.5	52.5	15 %
TMN-2.3	2.3	7 1/2 %	TMN-30	30	7 1/2 %	TMW-70	70	15 %
TMN-3.0	3.0	7 1/2 %	TMN-40	40	7 1/2 %			



**HPM and LPM
case (MIL AG)**
1 x 1 x 1 3/8"
Weight.....2 1/4 oz.

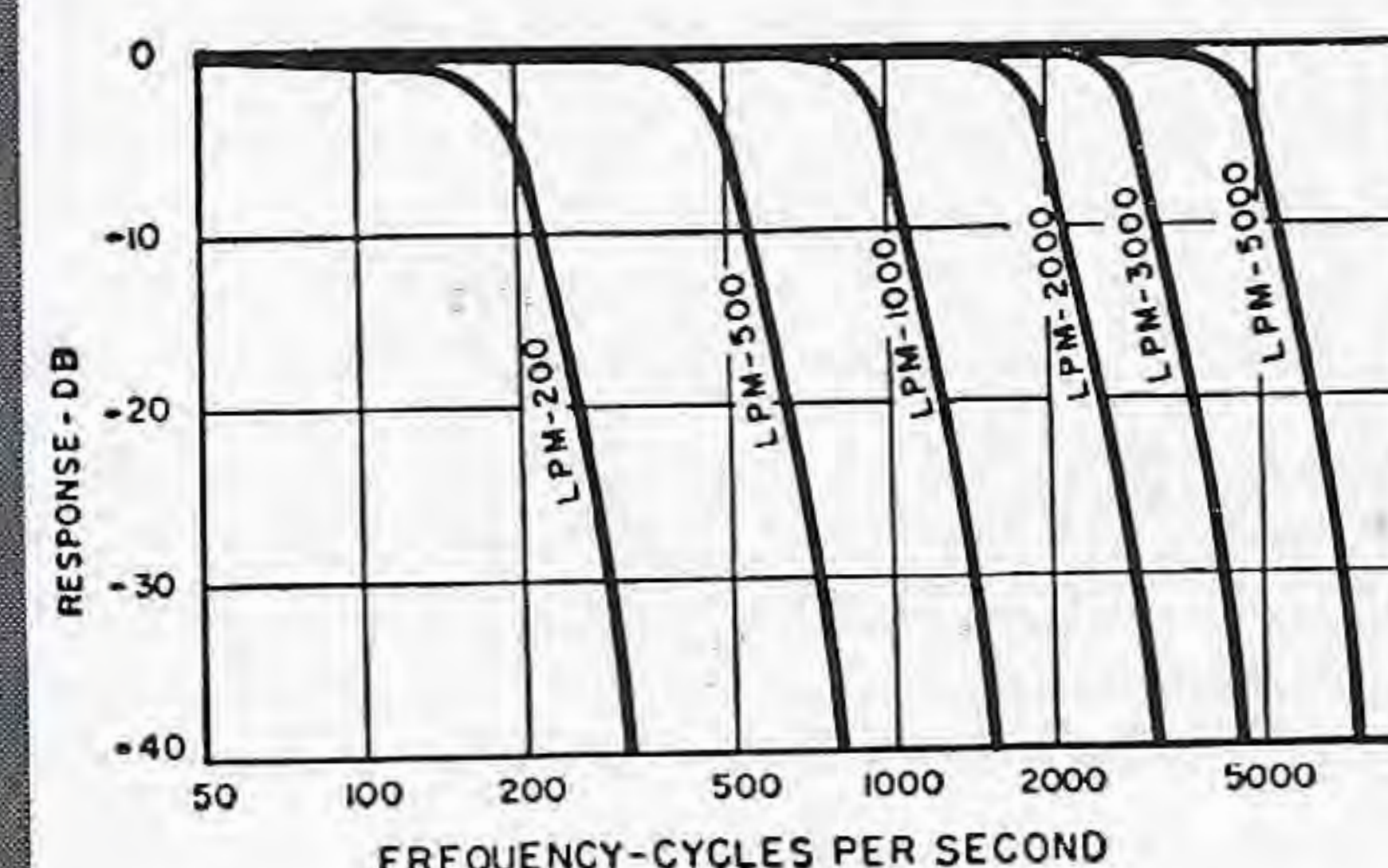
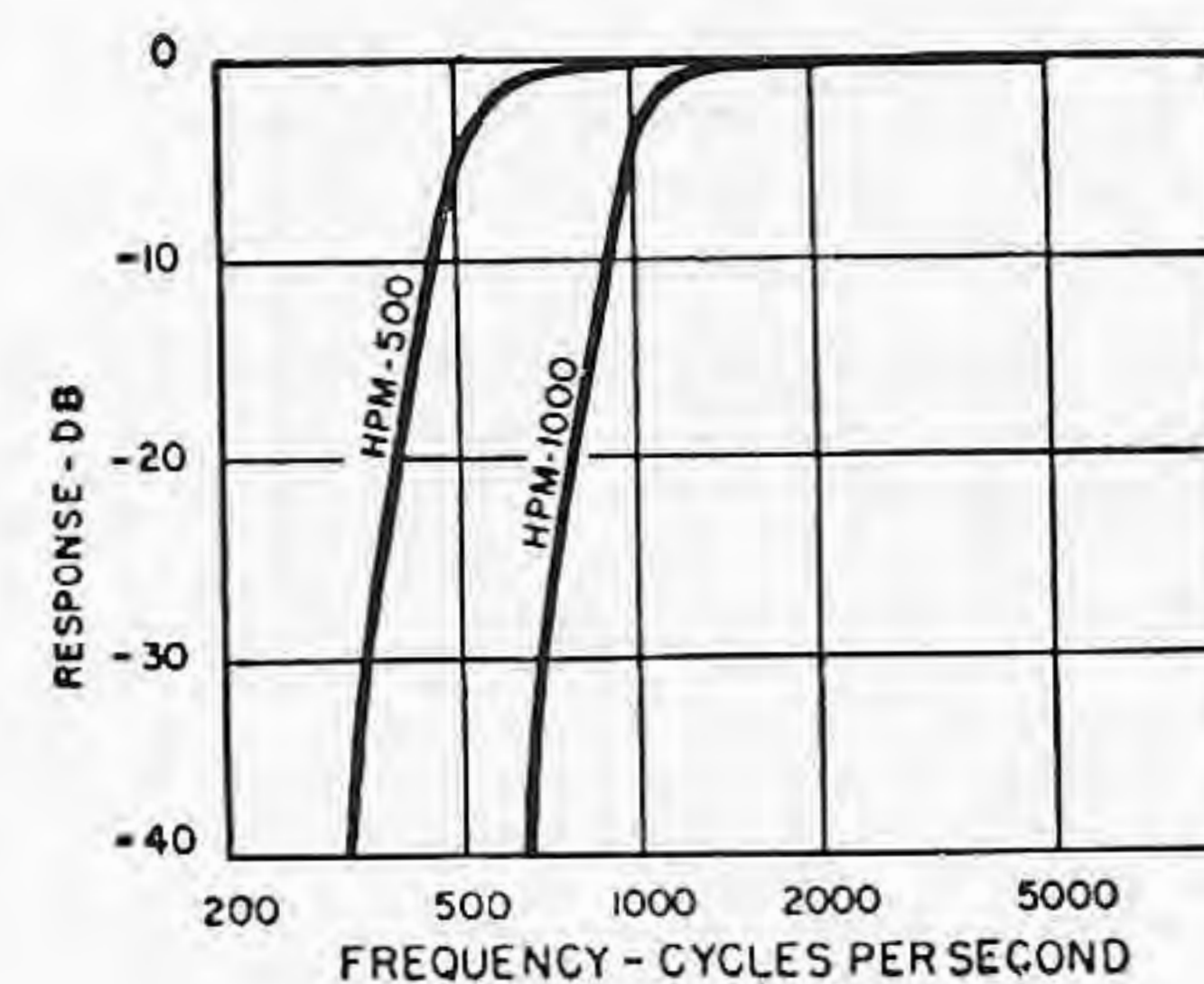
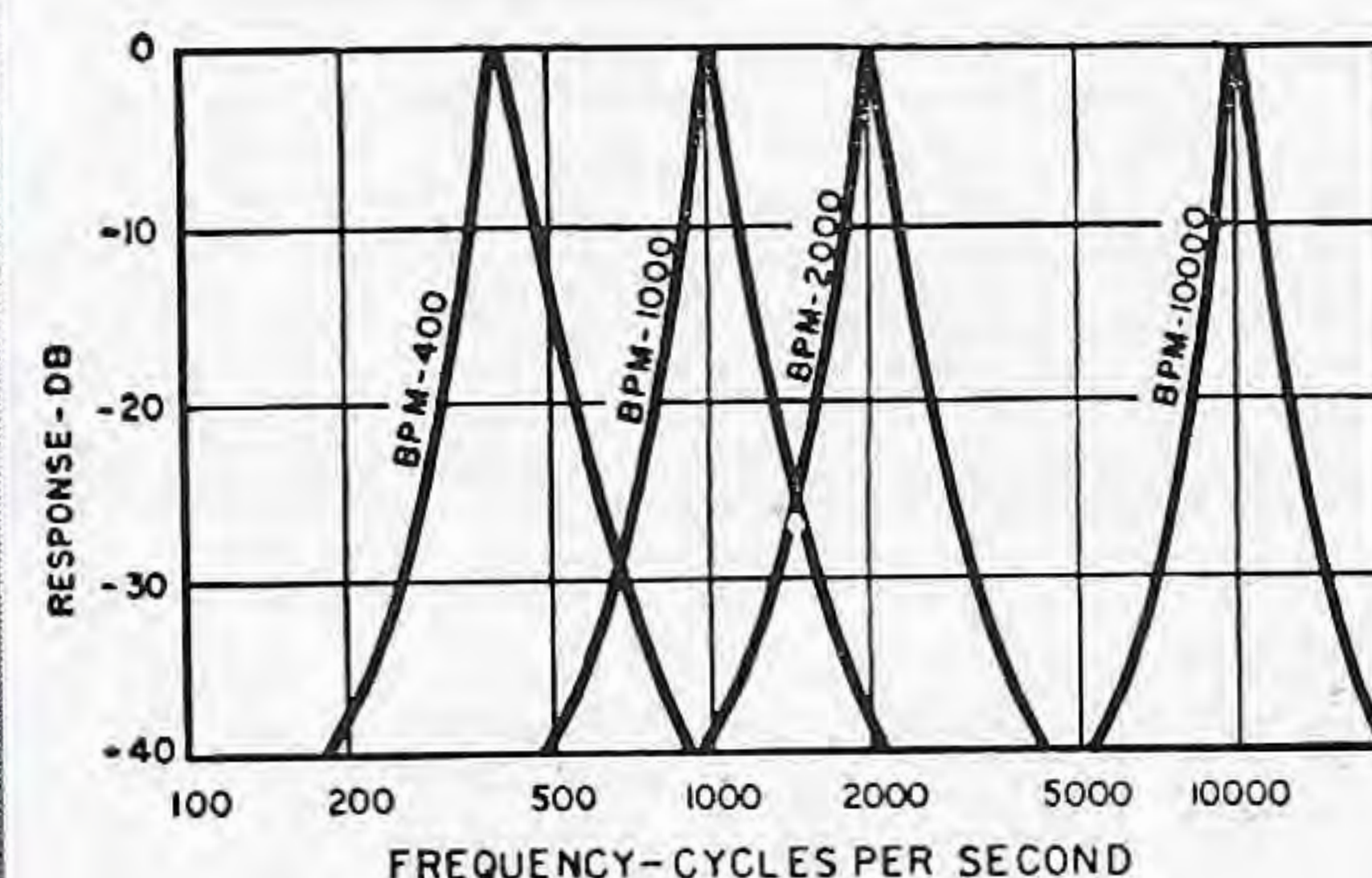


**BPM case
(MIL AF)**
3/4 x 3/4 x 1 1/8"
Weight.....1 oz.

STANDARD FILTERS STOCK FREQUENCIES

BPM-400	BPM-10000	LPM-1000
BPM-750	HPM-500	LPM-2000
BPM-1000	HPM-1000	LPM-3000
BPM-1500	LPM-200	LPM-5000
BPM-2000	LPM-500	

TYPICAL RESPONSE CURVES OF MINIATURE FILTERS





TELEGRAPH TONE CHANNEL FILTERS

Hermetically sealed to MIL-T-27A and MIL-F-18327 Specs., see back cover.

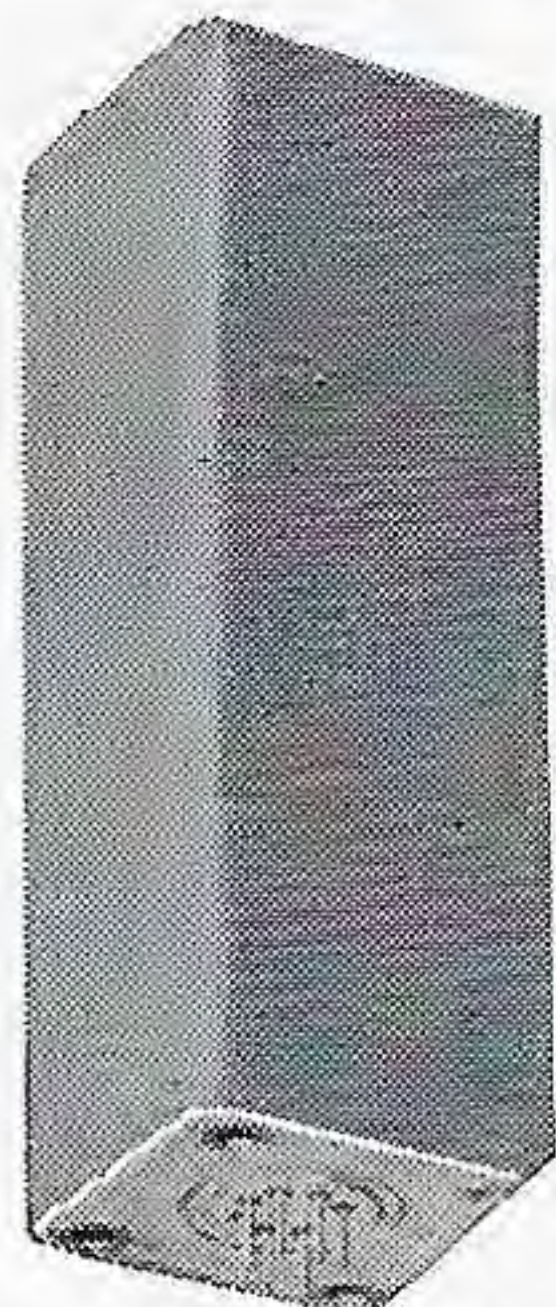
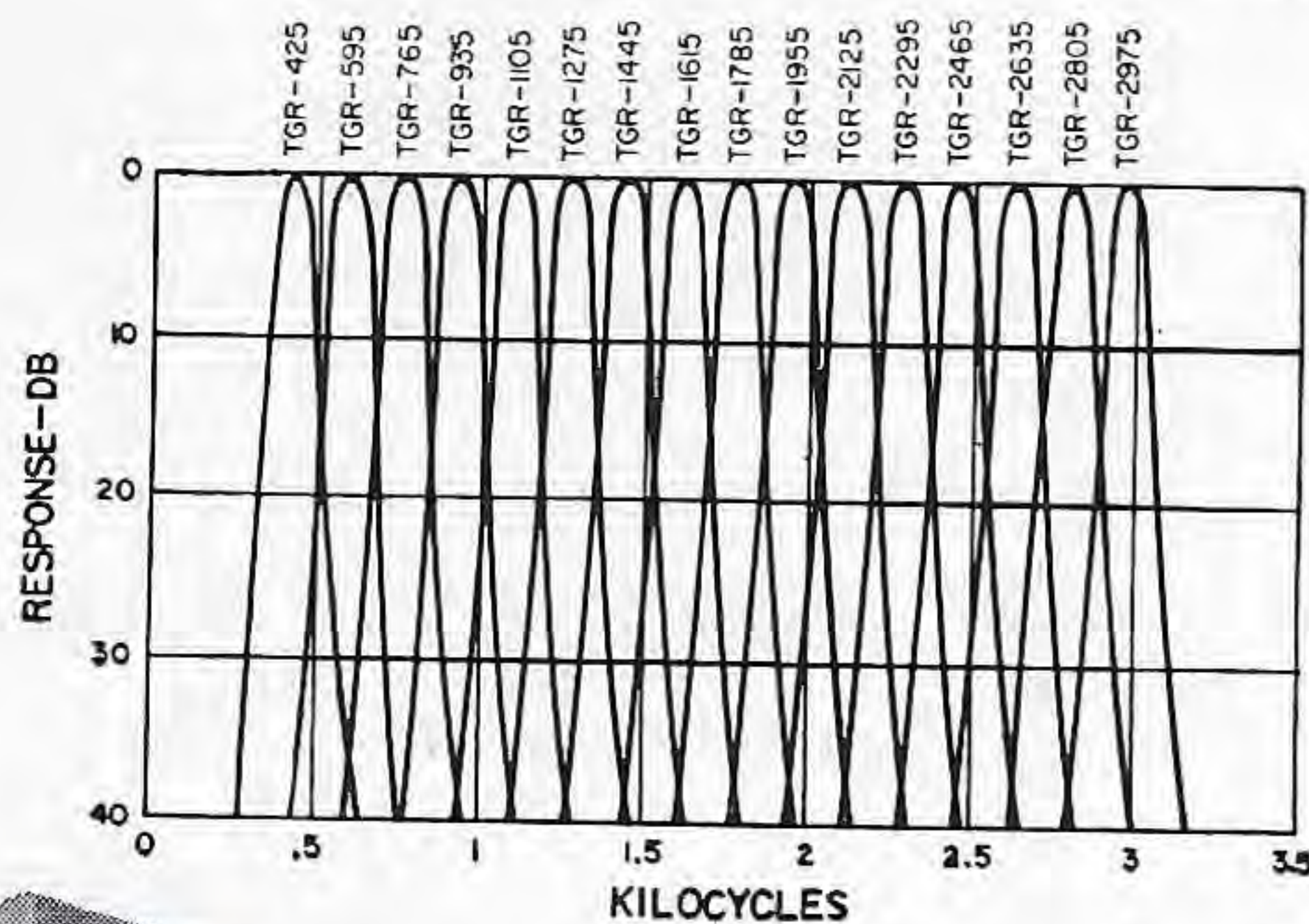
UTC band pass filters for multiplex transmitting and receiving provide maximum stability in miniature sizes. Stock filters cover all standard transmit and receive bands. All units employ 7 terminal header matching subminiature 7 pin socket.

TGR (receiving) filters are 600 ohms in and out. They are down less than 3 db at ± 42.5 cycles from center frequency and down

more than 30 db at ± 170 cycles. Attenuation is greater than 15 db at adjacent channel crossover.

TGT (transmitting) filters are 600 ohms in and out. They are down less than 3 db at ± 42.5 cycles from center frequency and down more than 16 db at ± 170 cycles. Attenuation is greater than 7.5 db at adjacent channel crossover.

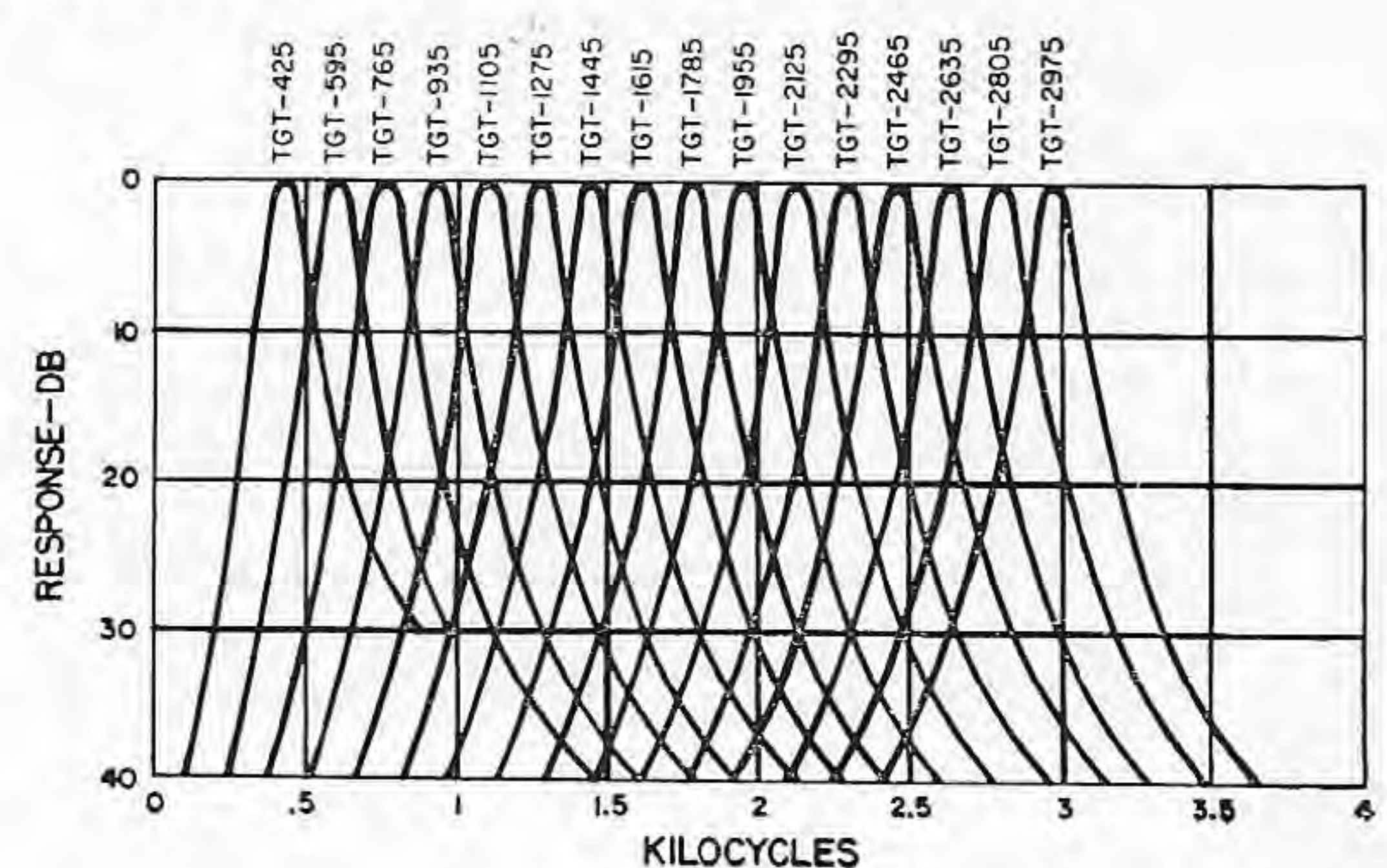
TYPICAL RESPONSE CURVES OF STANDARD TG FILTERS



TGR CASE
1 1/2 x 1 1/2 x 4 1/4"
Mtg.....1 1/16 x 1 1/16"
Screws6-32
Weight.....15 oz.

RECEIVING FILTERS

Type No.	Center Frequency (Cyc.)	Type No.	Center Frequency (Cyc.)
TGR-425	425	TGR-1785	1785
TGR-595	595	TGR-1955	1955
TGR-765	765	TGR-2125	2125
TGR-935	935	TGR-2295	2295
TGR-1105	1105	TGR-2465	2465
TGR-1275	1275	TGR-2635	2635
TGR-1445	1445	TGR-2805	2805
TGR-1615	1615	TGR-2975	2975



TGT CASE
1 1/2 x 1 1/2 x 2 1/2"
Mtg.....1 1/16 x 1 1/16"
Screws6-32
Weight.....8 oz.

TRANSMITTING FILTERS

Type No.	Center Frequency (Cyc.)	Type No.	Center Frequency (Cyc.)
TGT-425	425	TGT-1785	1785
TGT-595	595	TGT-1955	1955
TGT-765	765	TGT-2125	2125
TGT-935	935	TGT-2295	2295
TGT-1105	1105	TGT-2465	2465
TGT-1275	1275	TGT-2635	2635
TGT-1445	1445	TGT-2805	2805
TGT-1615	1615	TGT-2975	2975



BROADCAST and RECORDING EQUALIZERS and FILTERS

500/600 ohms

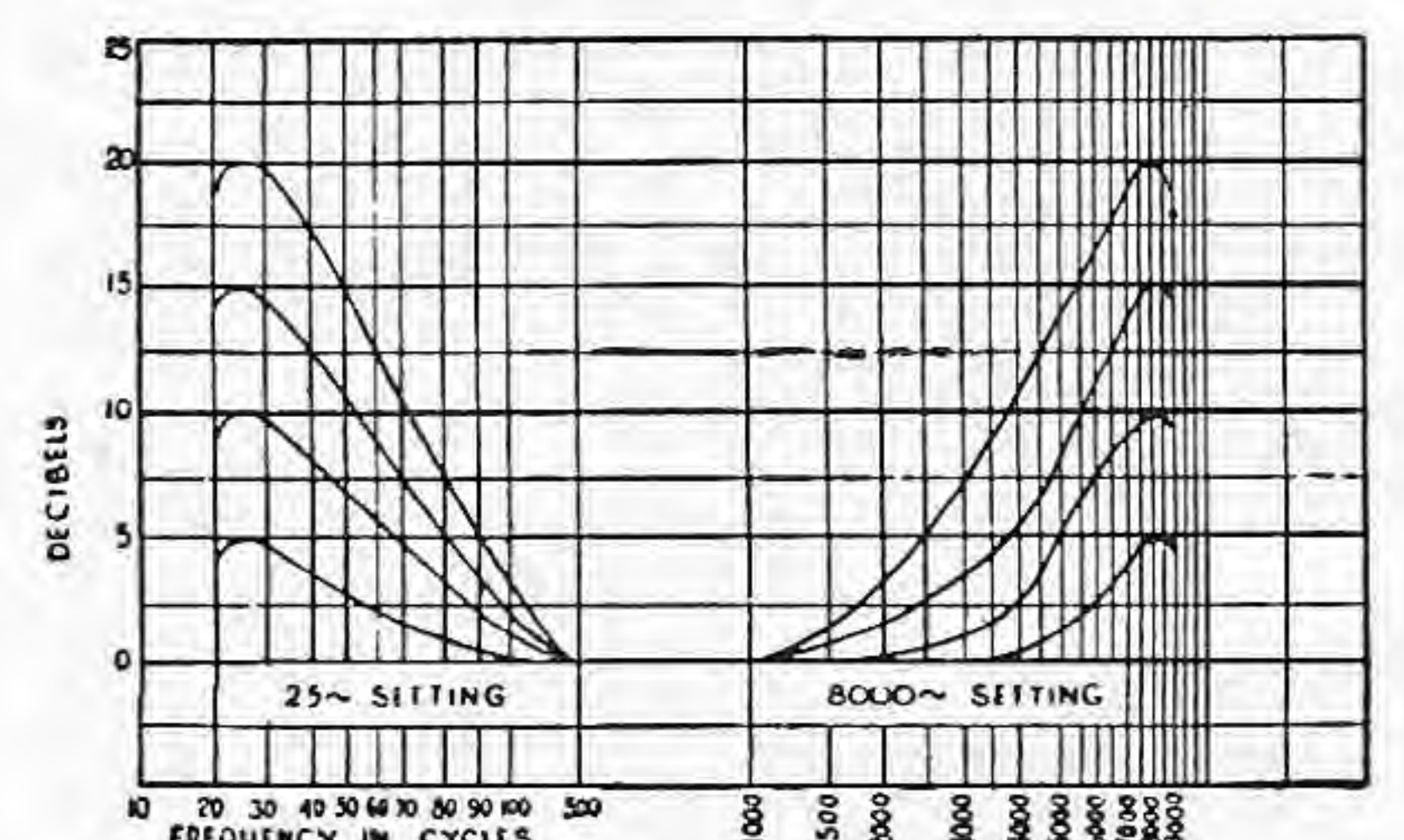
3AX UNIVERSAL EQUALIZER. The universal characteristics of the UTC 3AX equalizer have made it the most popular item for broadcast and recording equalization. This unique unit, with which most communication engineers are already familiar, is an accurately calibrated, quickly adjustable, combined low and high frequency equalizer. The low frequency controls include a switch for adjusting the maximum equalization frequency to 25, 50, or 100 cycles and a calibrated T-pad for exact adjustment of the amount of equalization. The high frequency portion of this unit includes a switch to set maximum equalization point at 4000, 6000, 8000, 10,000 or 15,000 cycles, and a similar calibrated control reading directly in db. Equalization up to 25 db available at any frequency selected.

Through a unique arrangement of compensating pads, changes in adjustment of the 3AX equalizer do not affect the apparent aural level. The construction is of the depressed chassis, etched panel, rack mount type. Thoroughly shielded against inductive pickup with UTC Trialloy Shielding. Dimensions of panel 3 1/2" x 19". Depth 7 1/2". Weight 15 lbs.

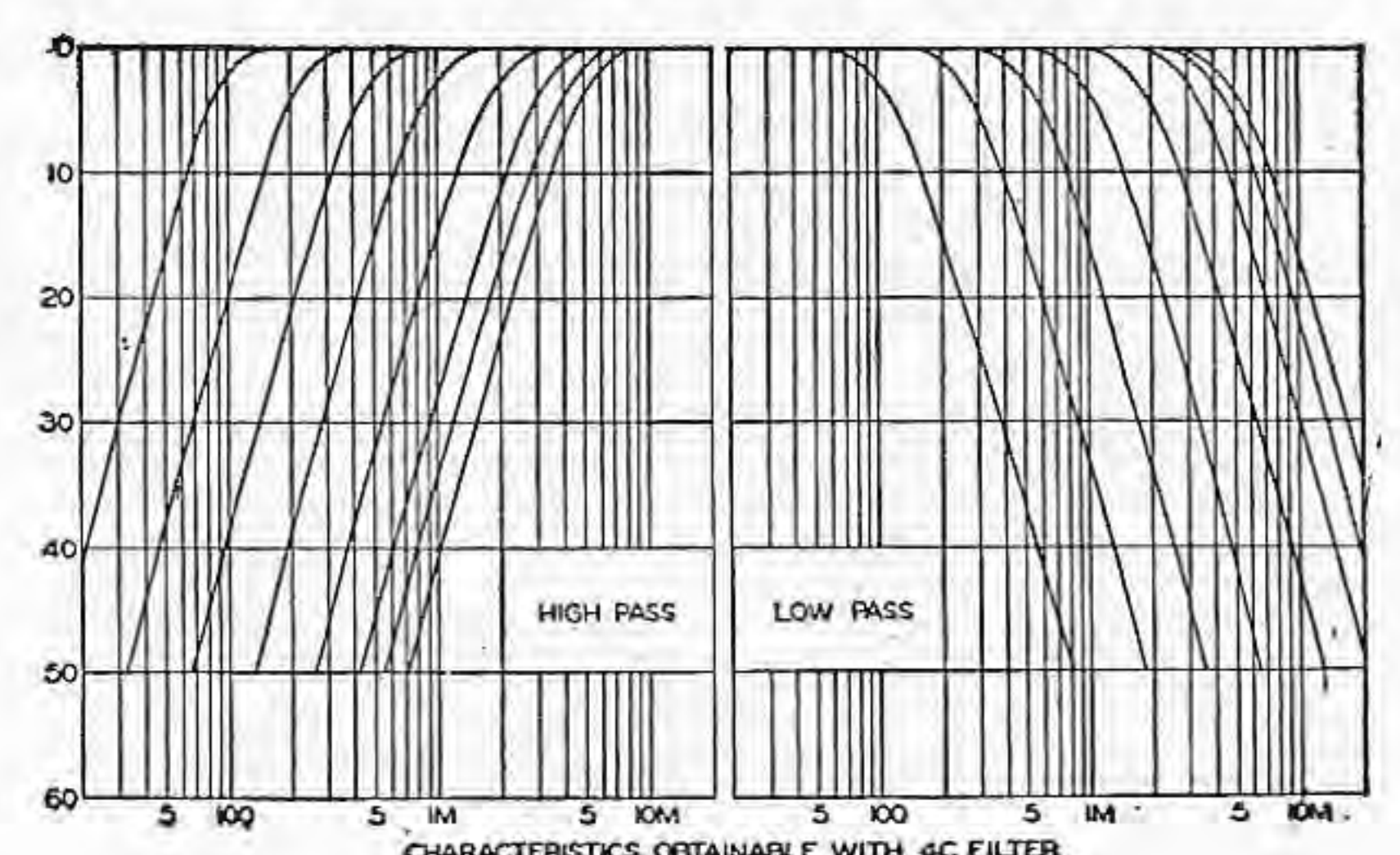
3A UNIVERSAL EQUALIZER. The 3A equalizer is identical to the 3AX described above, except that it does not incorporate the compensating pads for constant insertion loss. The insertion loss is roughly proportional to the amount of equalization employed. All other characteristics identical with the 3AX unit, this item weighs 10 lbs.

4C SOUND EFFECTS FILTER. The use of filters to obtain unusual sound effects has found wide application in broadcast technique. The Model 4C Filter was originally developed for one of the large broadcasting chains, and is now used extensively by many broadcast stations. Two controls are provided on the 5 1/4" x 19" panel, which is similar in appearance to the 3AX unit. The weight of the 4C unit is 20 lbs.

The low pass switch can be set for cutoff frequencies of 100, 250, 500, 1000, 2000, 3000, 4000, or 5000 cycles. The high pass switch has identical frequency points. The great number of cutoff frequencies provides for a wide latitude of tone control. Though not normally necessary, external potentiometers may be inserted in the circuit for attenuation control.



TYPICAL CURVES OBTAINABLE WITH 3A OR 3AX EQUALIZER

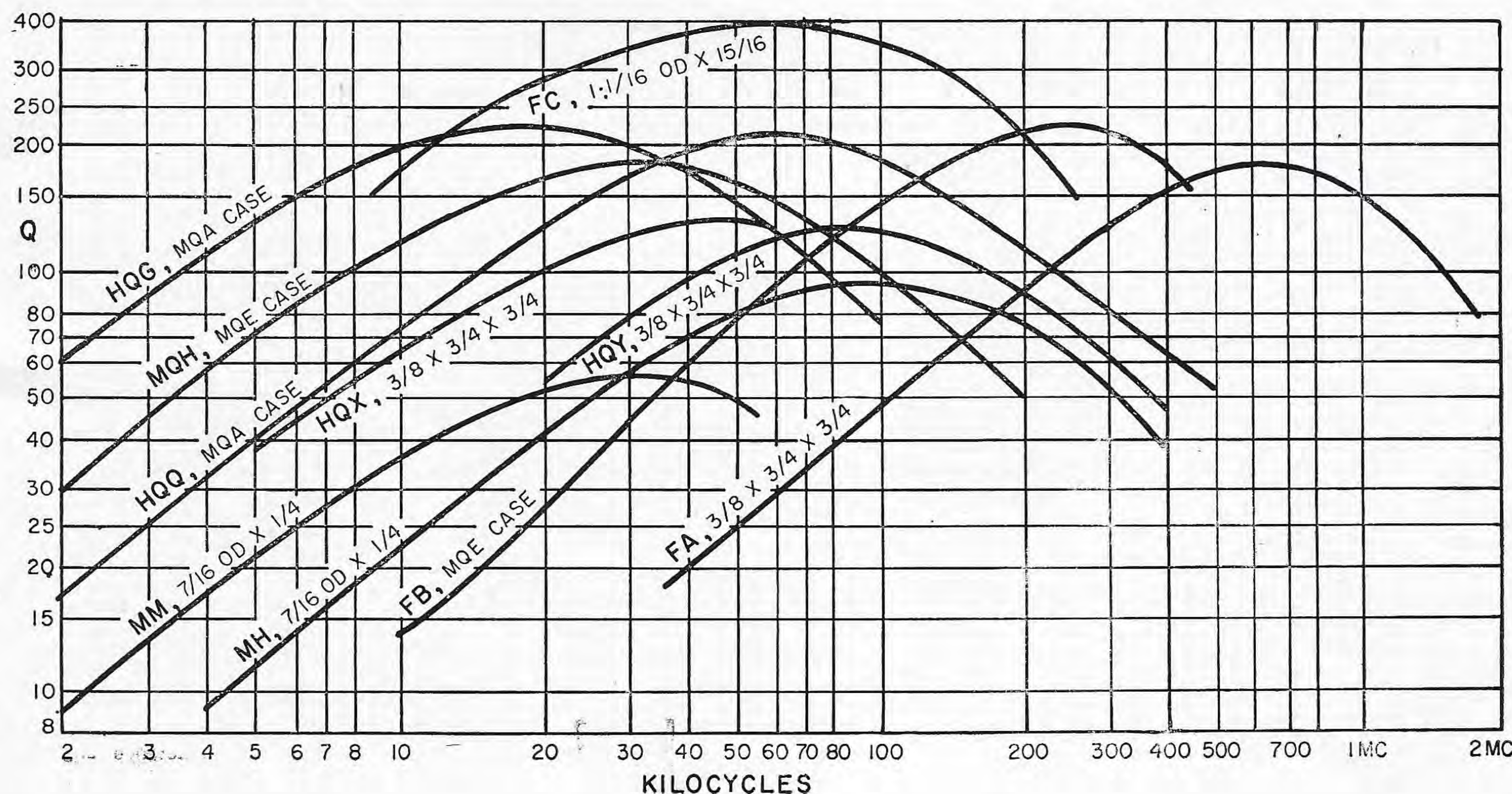
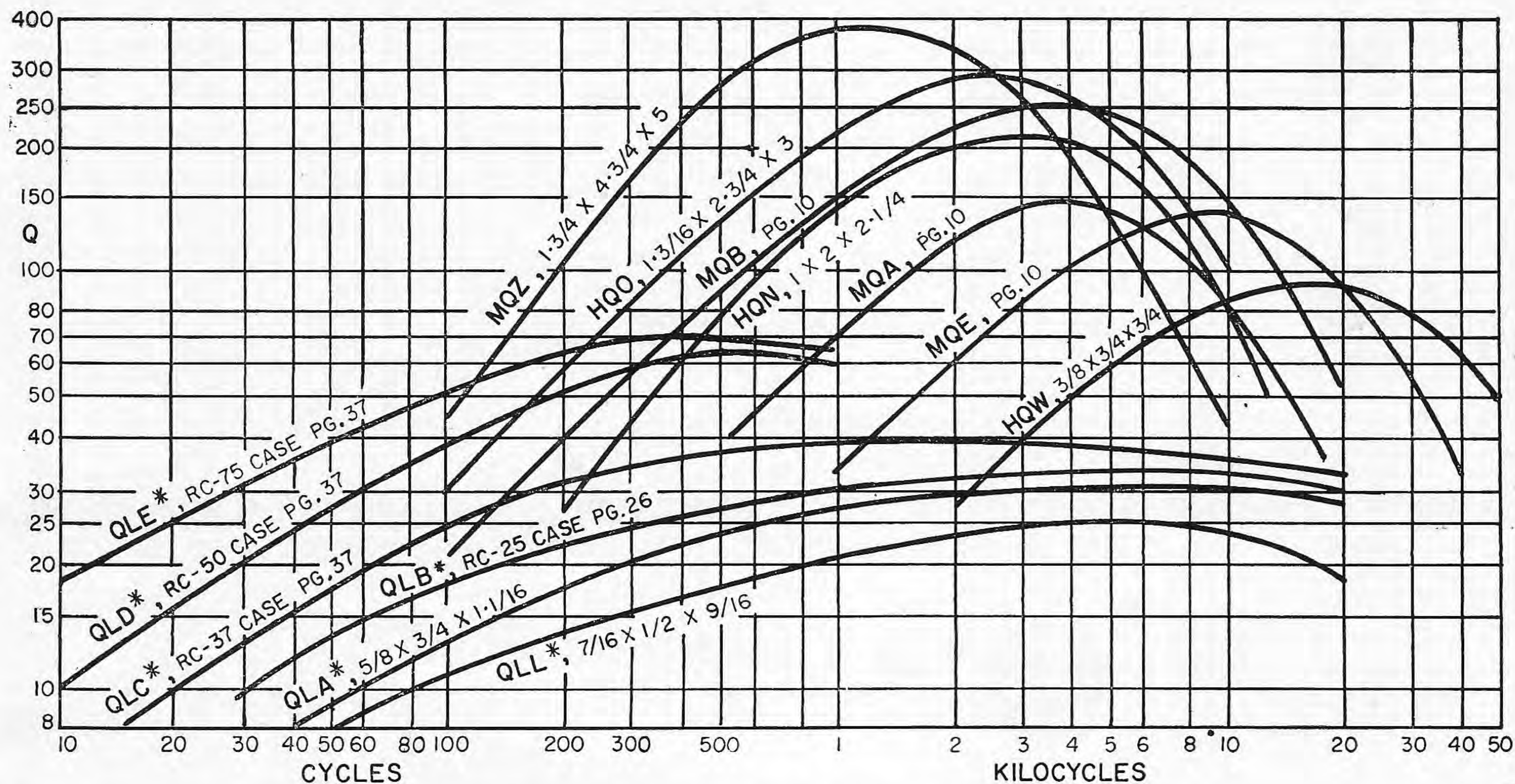
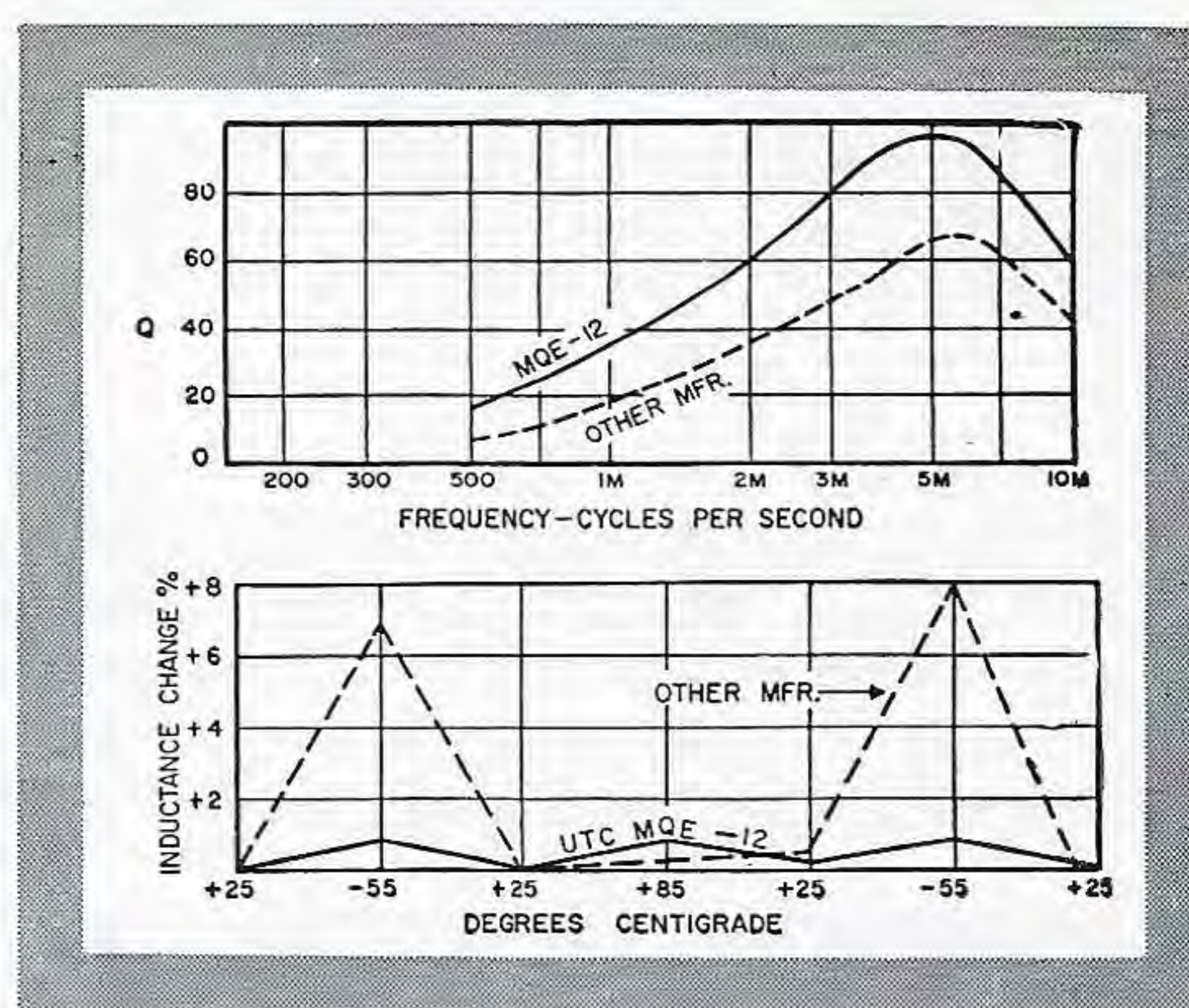


CHARACTERISTICS OBTAINABLE WITH 4C FILTER



FOR SUPERIOR HIGH Q COILS

Twenty-five years of specialization in high Q coils are reflected in the permalloy dust toroid, ferrite, and laminated structures produced by UTC today. Special winding machines and stabilization methods have resulted in coils of superior performance and stability. For example, the curves at the right show the performance of a stock UTC MQE unit compared to an "equivalent" employing same type permalloy dust core. While this catalog lists 200 stock high Q coils, a large portion of our production is on special coils to customers requirements. The curves below illustrate the capabilities of a few structures among the many permalloy dust, ferrite and laminate types produced by UTC. Dimensions shown are cased. Curves of QL* items indicate Q obtainable by designing for that frequency . . . i.e. If QLC is designed for maximum Q at 60 cycles (19), it will have a Q of 14 at 400 cycles. Similarly, if designed for maximum Q at 400 cycles (36), it will have a Q of 9 at 60 cycles.

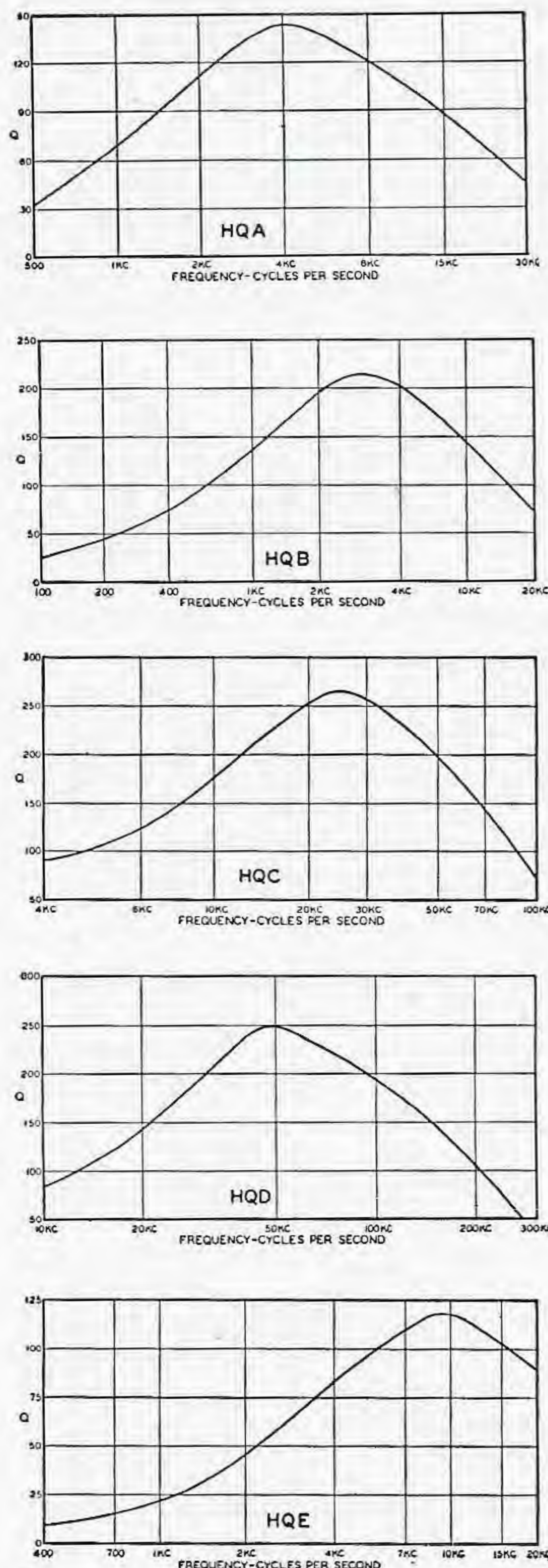
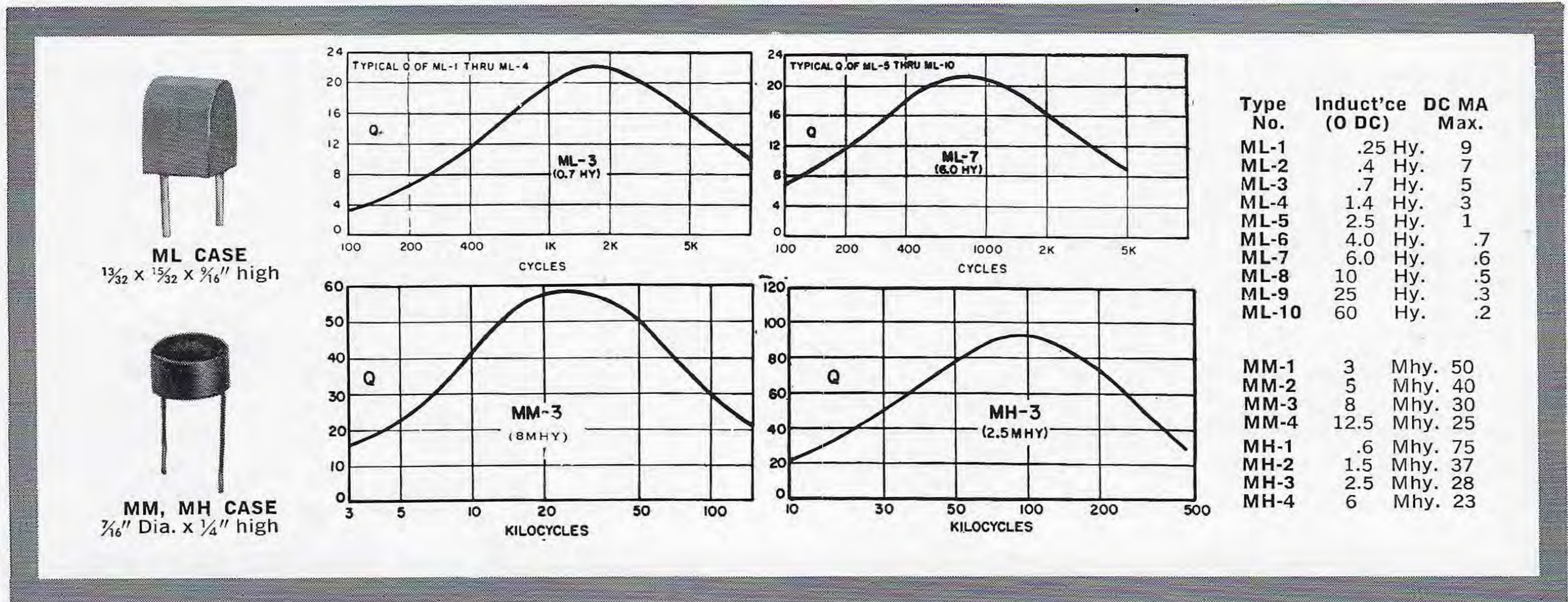




MINIDUCTORS / *Hermetically sealed to MIL-T-27A Specs., see back cover...all units MIL type TF5RX20ZZ*

UTC Miniductors are ideal for transistor and printed circuit applications, providing high Q in miniature form. The ML-1 to 4 units are for medium low frequencies, adjusted to $\pm 3\%$ at 1 V. 1 KC. The ML-5 thru 10 series are for lower frequencies, adjusted to $\pm 3\%$ at 1 V. 400 cycles. The MM and MH units are for medium and high frequencies, adjusted to a tolerance of $\pm 2\%$.

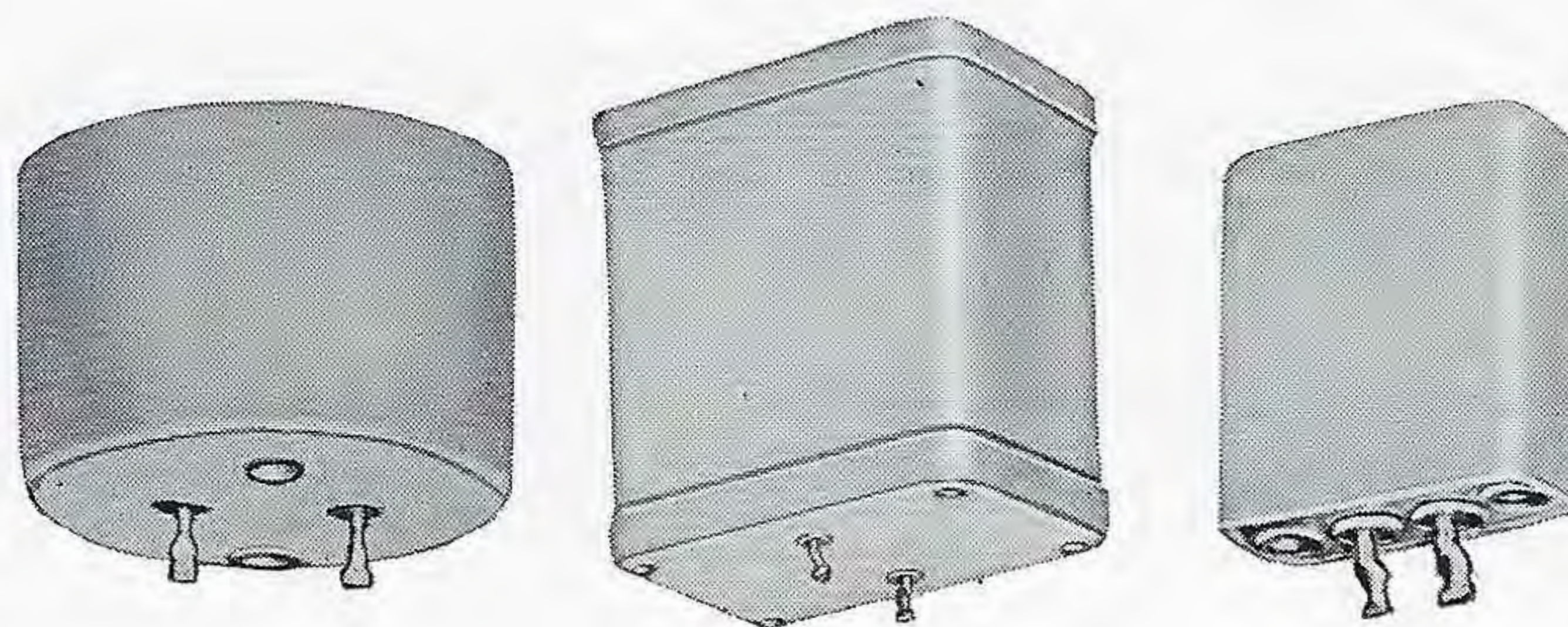
Temperature stability is excellent on all Miniductors, from -55° C. to $+100^{\circ}$ C. The ML units are in a Hipermalloy shield case... the MM and MH coils are symmetrical toroids... for high coupling attenuation and low hum pickup. The DCMA MAX. shown is for approximately 5% drop in inductance.



HIGH Q TOROID INDUCTORS

Hermetically sealed to MIL-T-27A Specs., see back cover...all units MIL type TF4RX20YY

Favorites for over fifteen years, UTC HQ Toroids are only excelled by the preferred new "M" series on opposite page. As typical Q curves show, HQ coils are available for applications from 100 cycles to 300 KC. Adjusted to 1%, the inductance is virtually independent of frequency, temperature, and vibration. Voltage stability is excellent, and shielding case assures 80 db coupling attenuation.



HQA, HQC, HQD CASE
Diameter1 1/16"
Height1 1/16"
Mounting1 1/8"
Screws6-32
Cutout5/16" x 1 1/16"
Weight5 oz.

HQB CASE
Length2 5/8"
Width1 5/8"
Height2 5/8"
Mounting1 1/4" x 2 1/4"
Screws6-32
Cutout5/16" x 1 1/8"
Weight14 oz.

HQE CASE
Length1 1/16"
Width1/2"
Height1 1/32"
Mounting3/4"
Screws4-40
Cutout5/16" x 1/2"
Weight1.5 oz.

Type No.	Inductance (0 DC)	DC MA Max.
HQA-1	5 mhy.	400
HQA-2	12.5 mhy.	260
HQA-3	20 mhy.	200
HQA-4	30 mhy.	160
HQA-5	50 mhy.	130
HQA-6	80 mhy.	100
HQA-7	125 mhy.	85
HQA-8	200 mhy.	65
HQA-9	300 mhy.	50
HQA-10	.5 hy.	40
HQA-11	.75 hy.	35
HQA-12	1.25 hy.	26
HQA-13	2 hy.	20
HQA-14	3 hy.	16
HQA-15	5 hy.	13
HQA-16	7.5 hy.	10
HQA-17	10 hy.	9
HQA-18	15 hy.	8
HQB-1	10 mhy.	410
HQB-2	30 mhy.	240
HQB-3	70 mhy.	170
HQB-4	120 mhy.	120
HQB-5	.5 hy.	60
HQB-6	1 hy.	41
HQB-7	2 hy.	30
HQB-8	3.5 hy.	22
HQB-9	7.5 hy.	16
HQB-10	12 hy.	11
HQB-11	18 hy.	9
HQB-12	25 hy.	8
HQE-1	5 mhy.	
HQE-2	10 mhy.	
HQE-3	50 mhy.	
HQE-4	100 mhy.	
HQE-5	200 mhy.	
HQC-1	1 mhy.	
HQC-2	2.5 mhy.	
HQC-3	5 mhy.	
HQC-4	10 mhy.	
HQC-5	20 mhy.	
HQD-1	.4 mhy.	
HQD-2	1 mhy.	
HQD-3	2.5 mhy.	
HQD-4	5 mhy.	
HQD-5	15 mhy.	

The DC MA Max. shown will drop coil inductance slightly.



NEW "M" TYPE TOROIDS

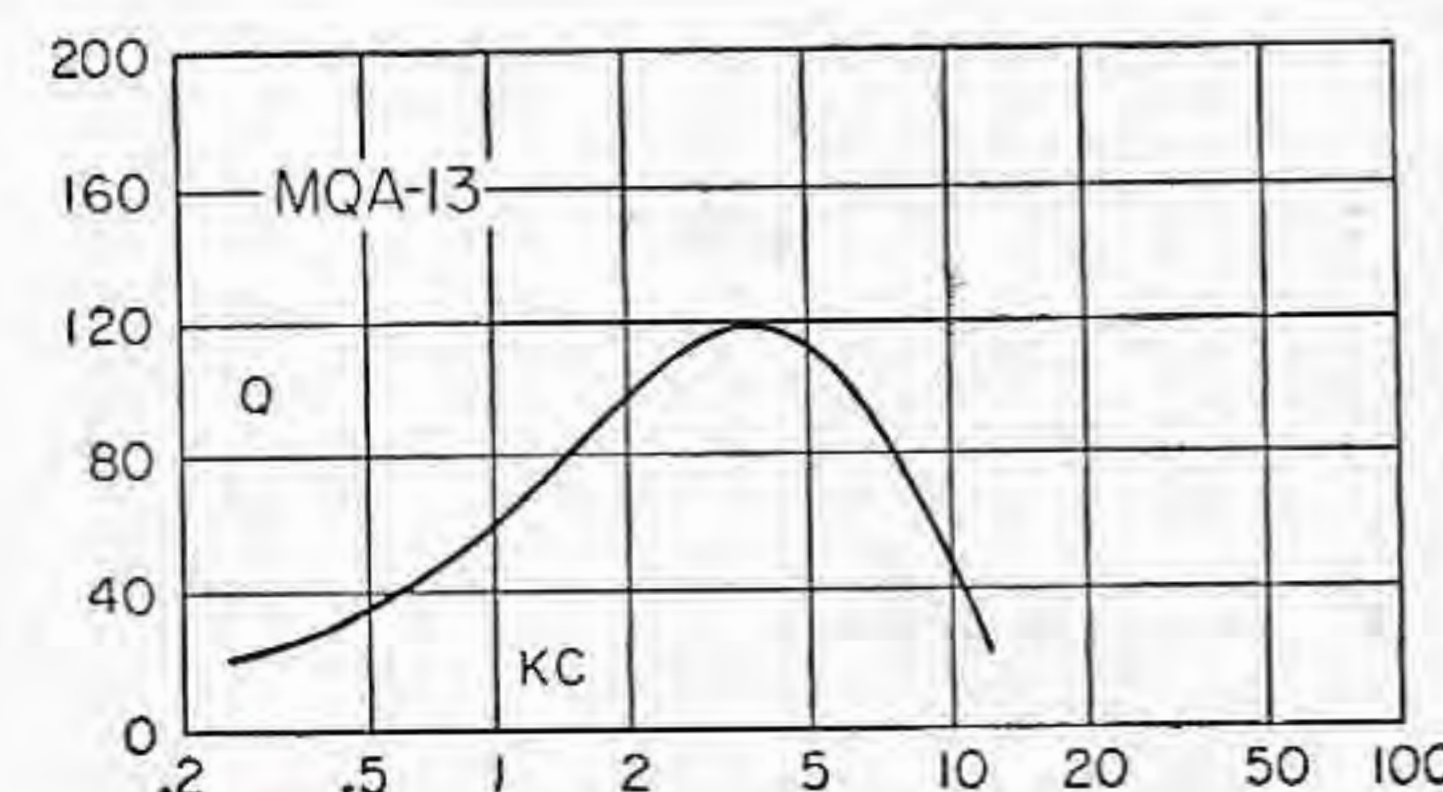
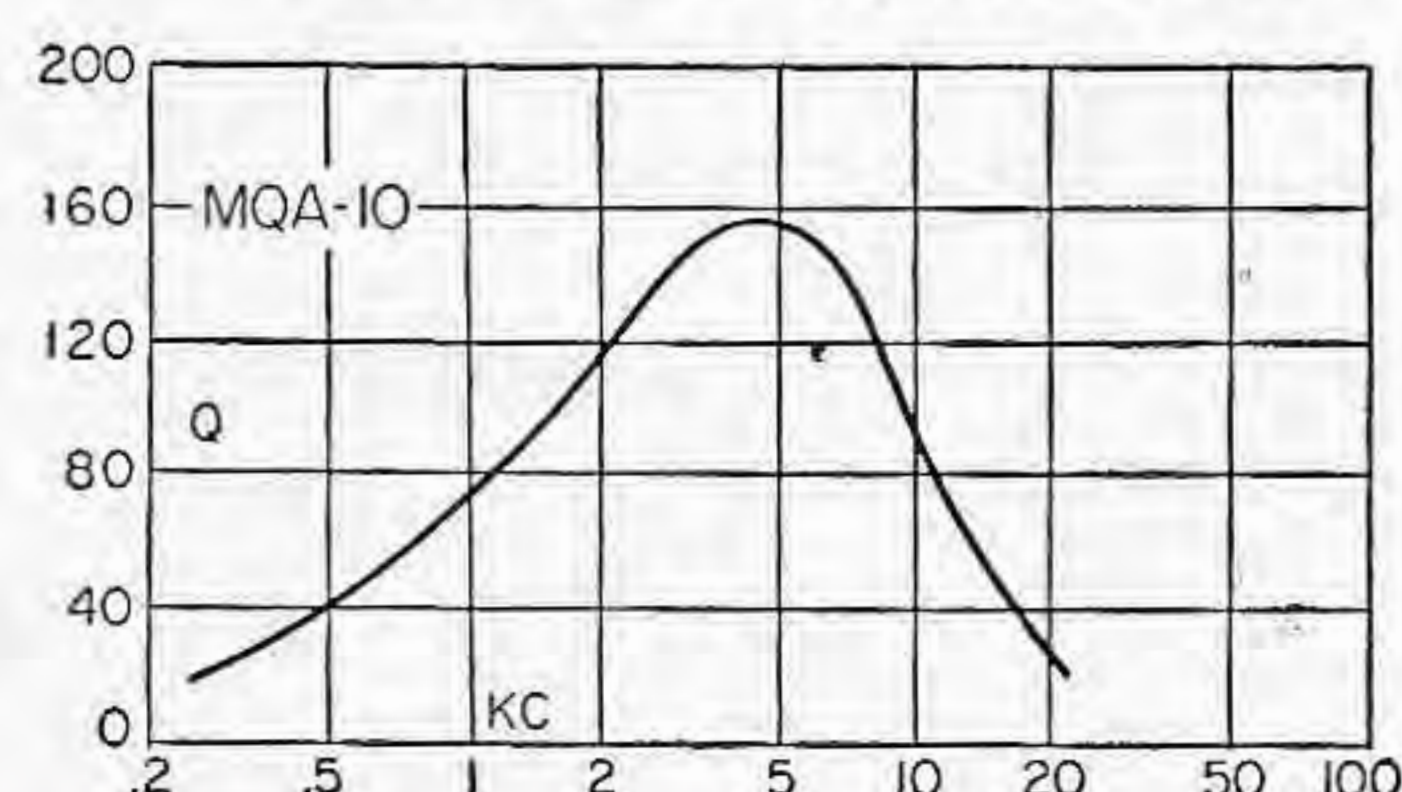
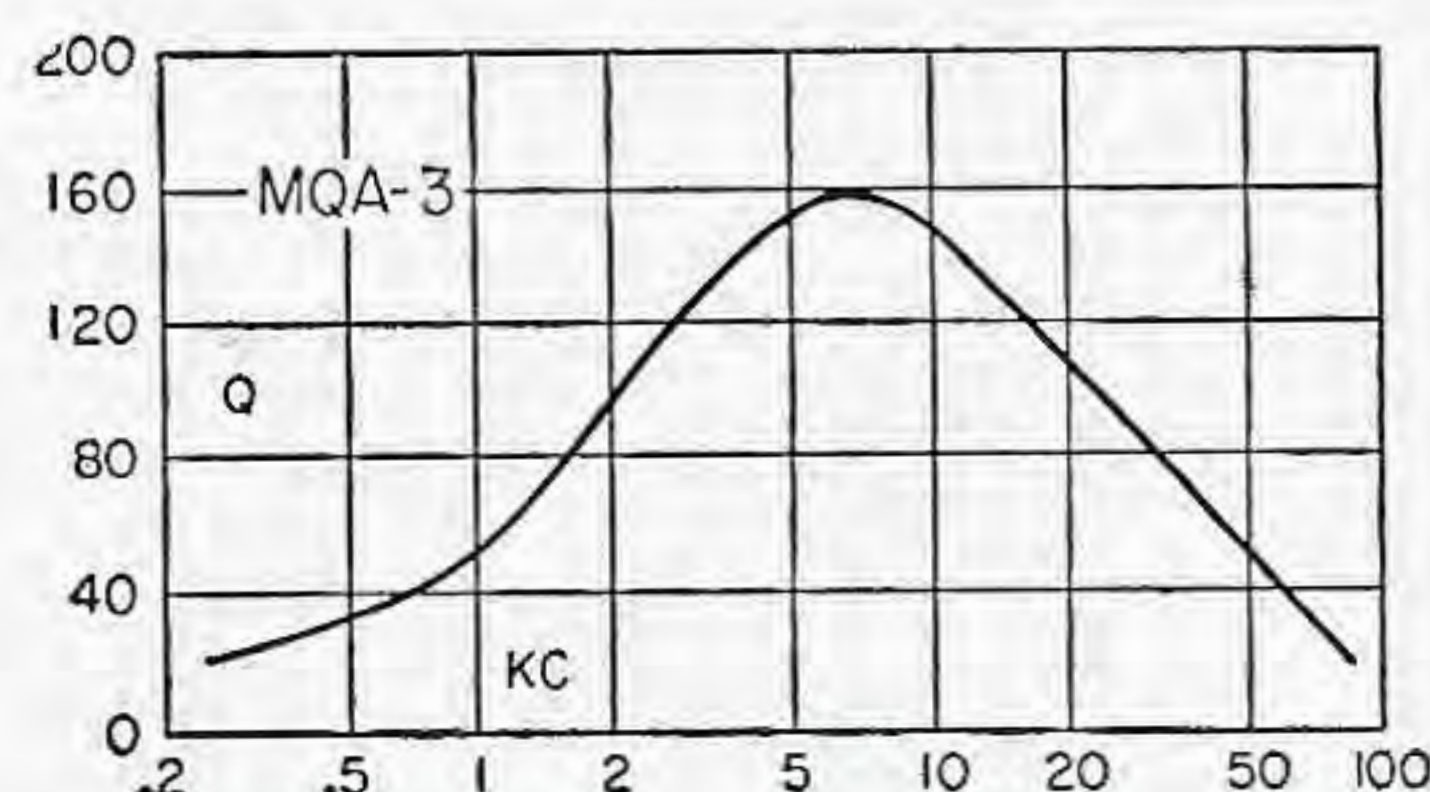
Hermetically sealed to MIL-T-27A Specs.,
... all units MIL type TF4RX20YY

MAXIMUM Q
MINIMUM SIZE

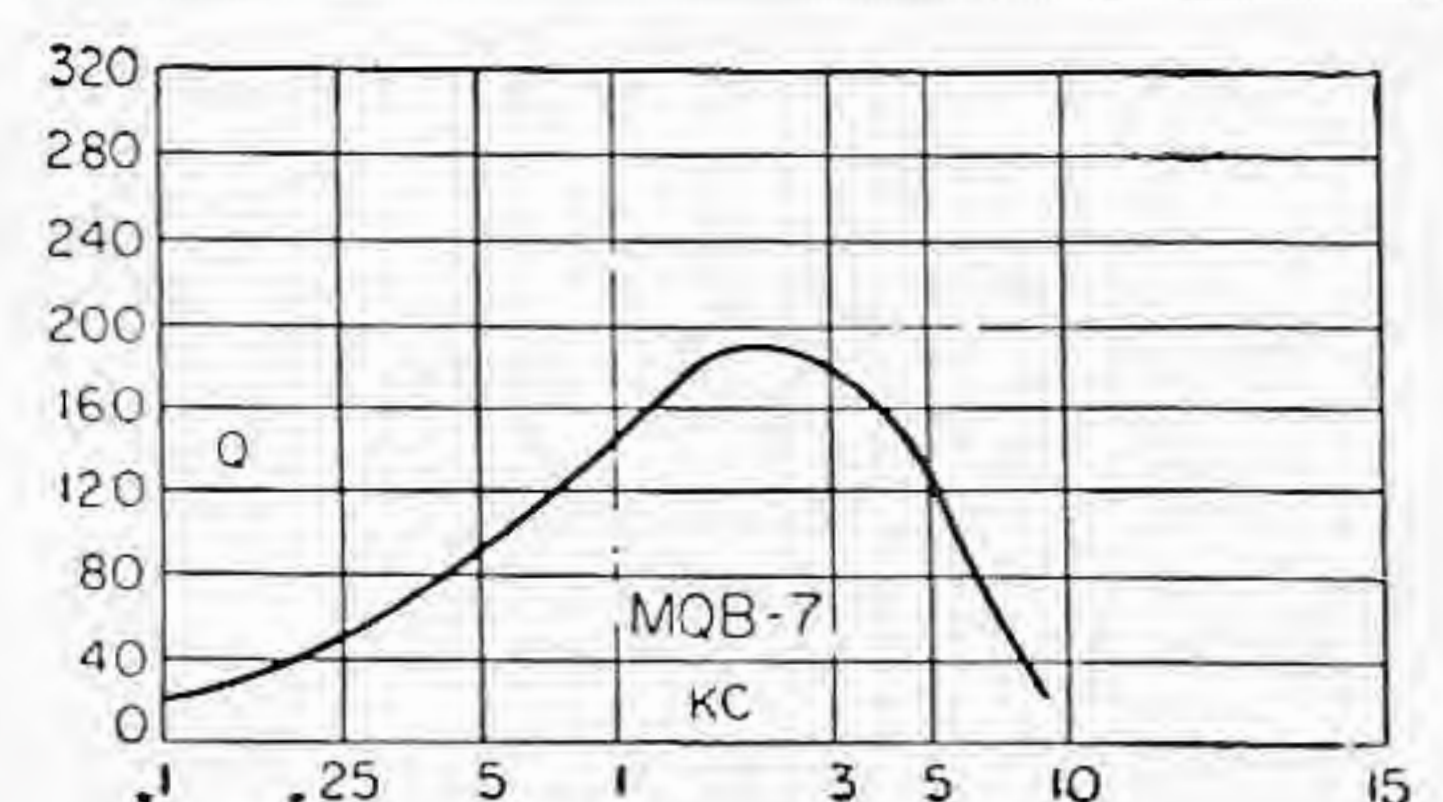
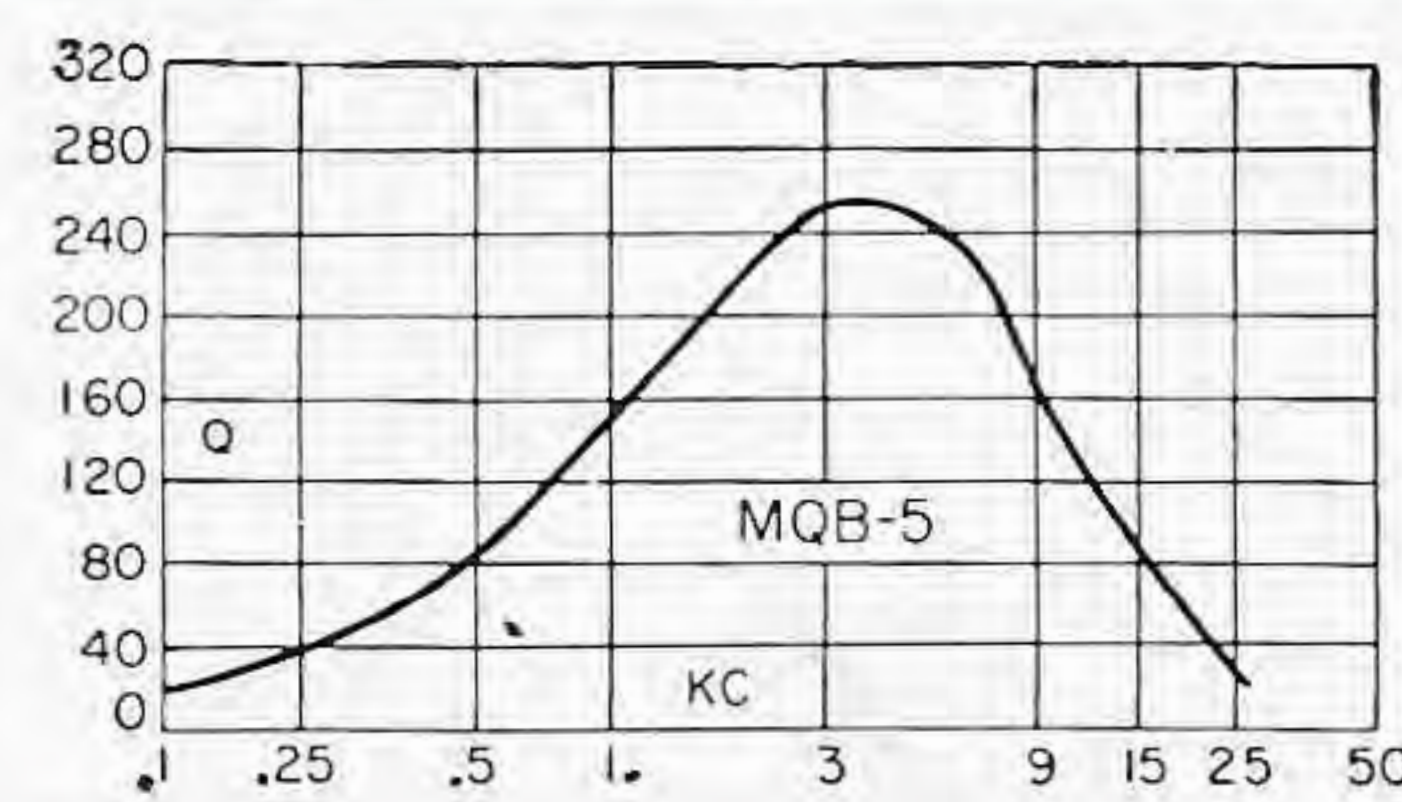
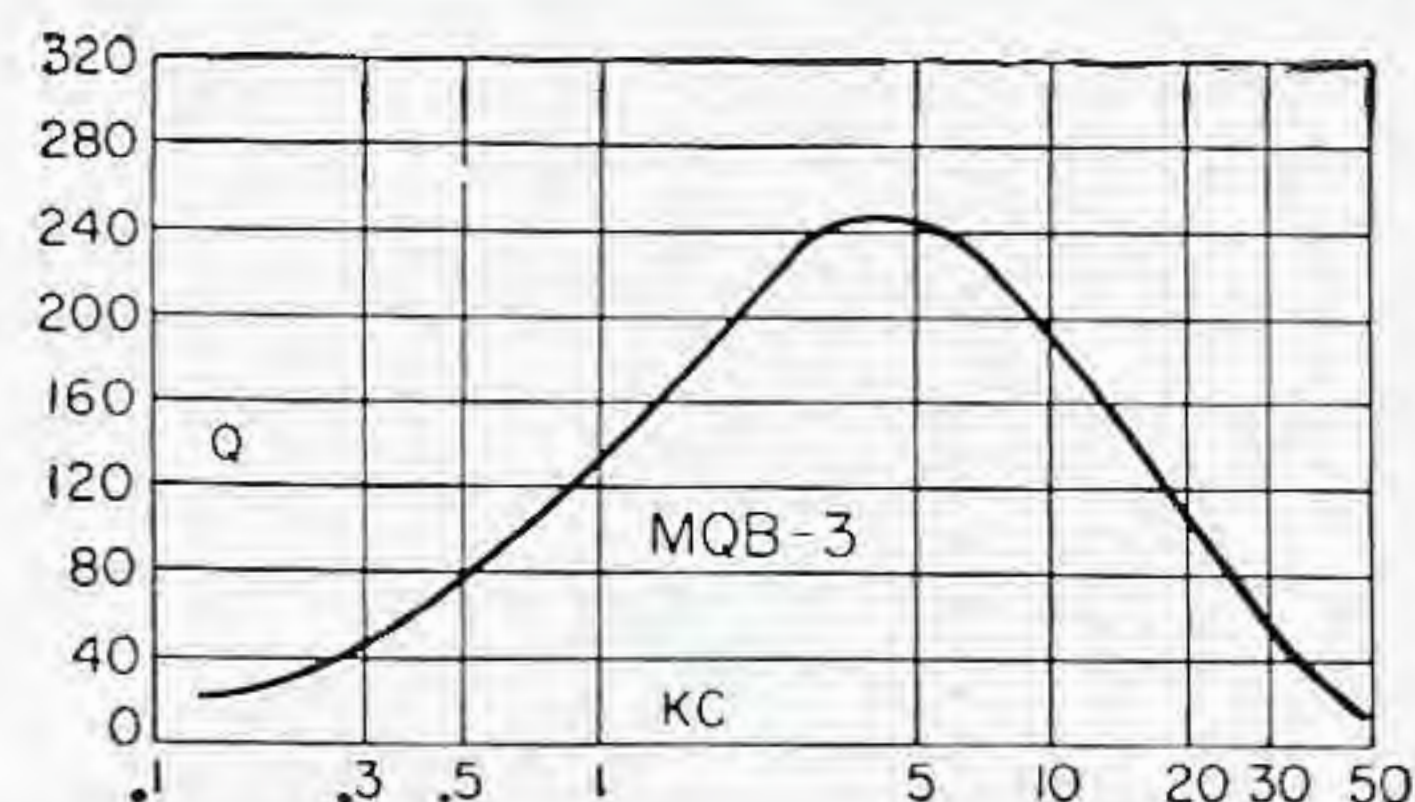
UTC Permalloy Dust Toroids have been the standard of the industry for 20 years. The MQ series of coils provide the highest Q factor in their class (see curves below) with miniaturized dimensions. All units are hermetically sealed to MIL-T-27A Specifications ... laboratory adjusted to 1% tolerance—O DC. Uncased and molded toroids available on production orders.

The stability is excellent. For the MQE-7 the inductance change is less than 1% for voltages from .1 to 3 volts. The MQA-13 change is less than 1% for applied voltages from .1 to 20 volts. The MQB-5 change is less than 1% for applied voltages from .1 to 50

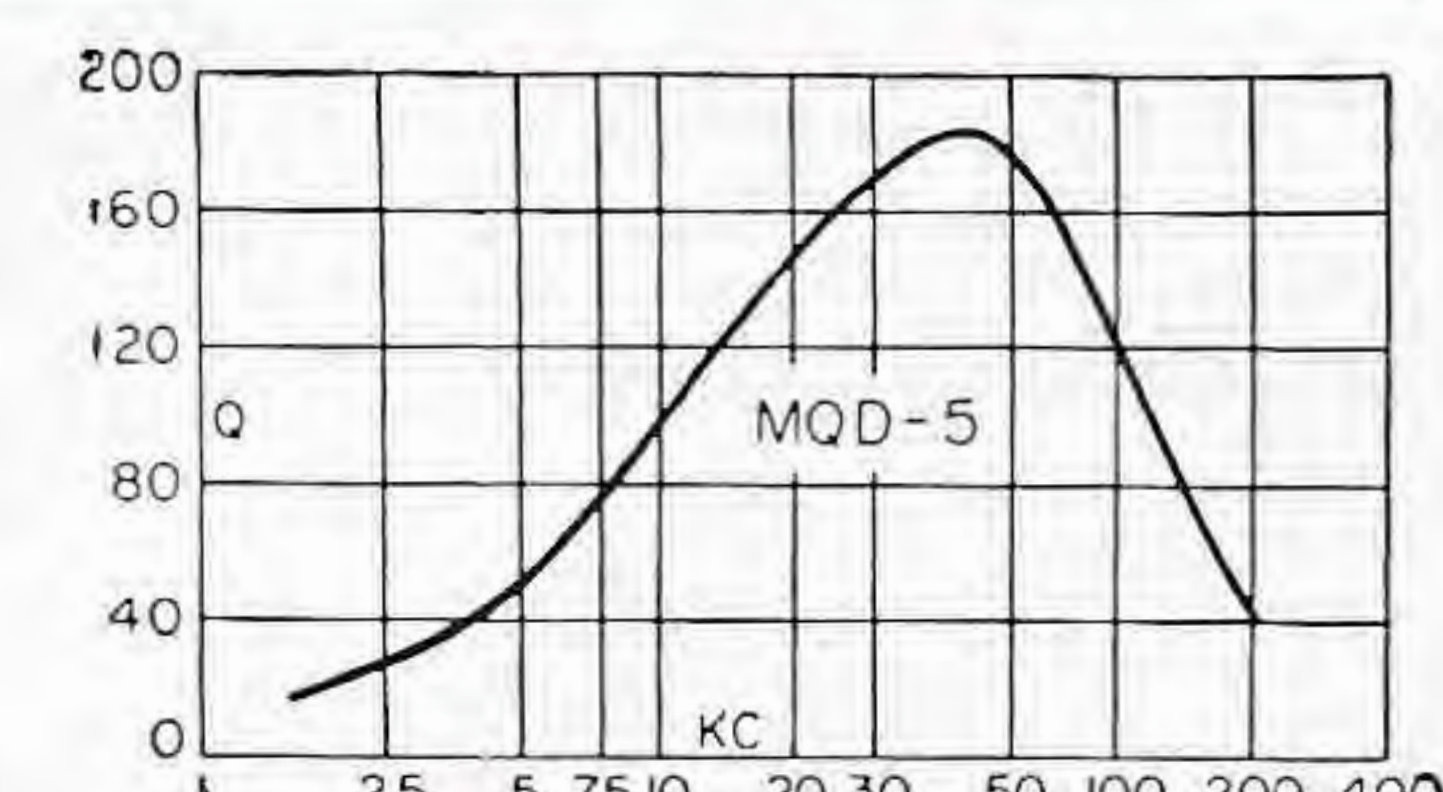
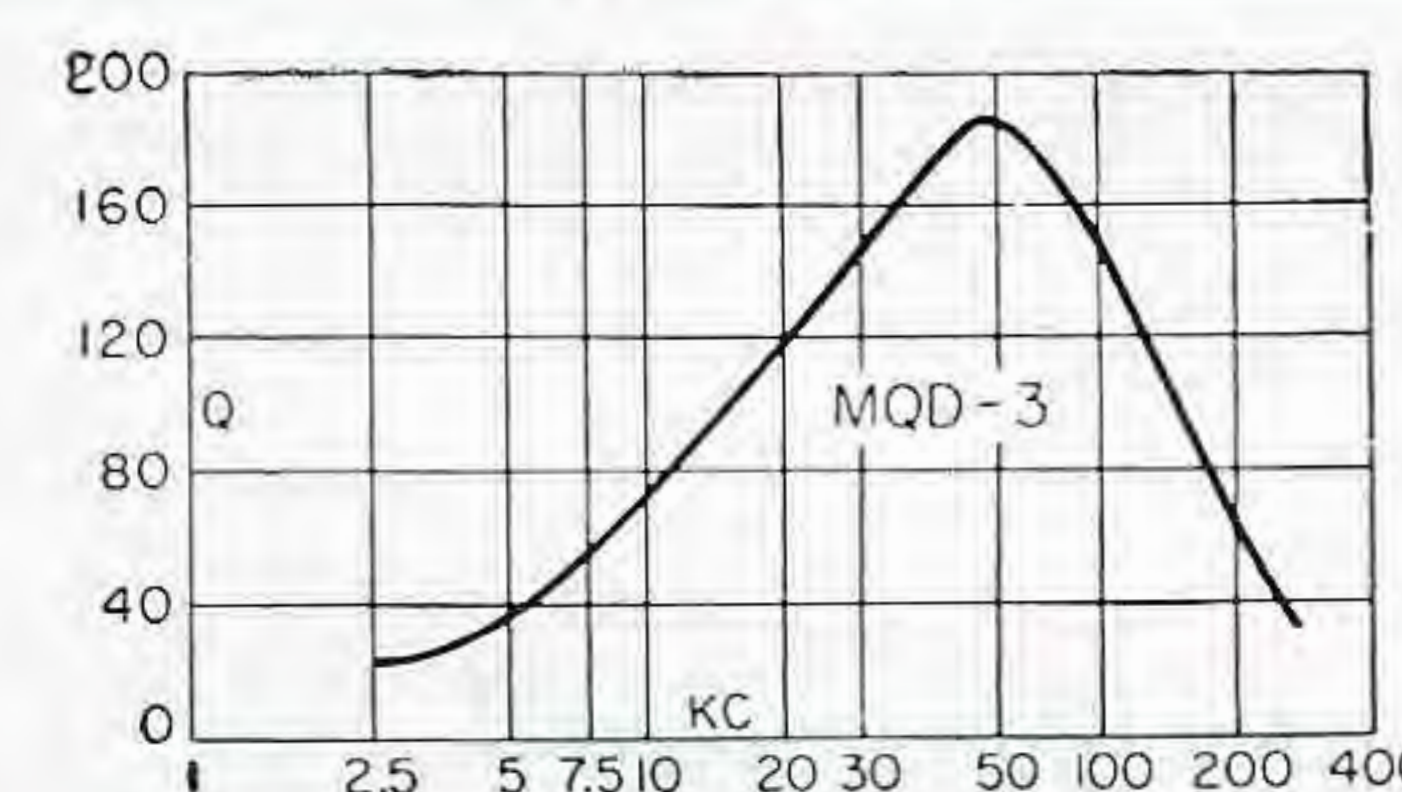
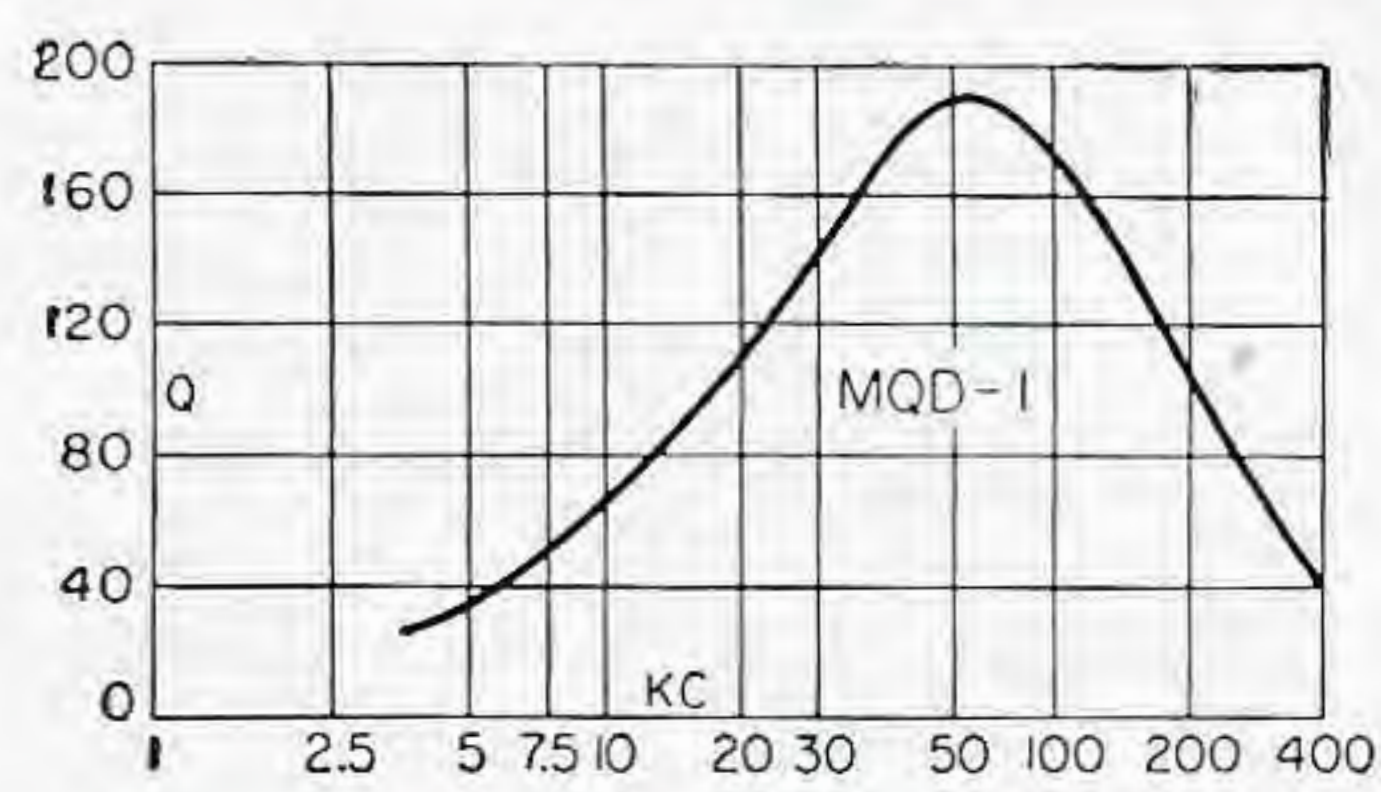
TYPICAL Q CURVES



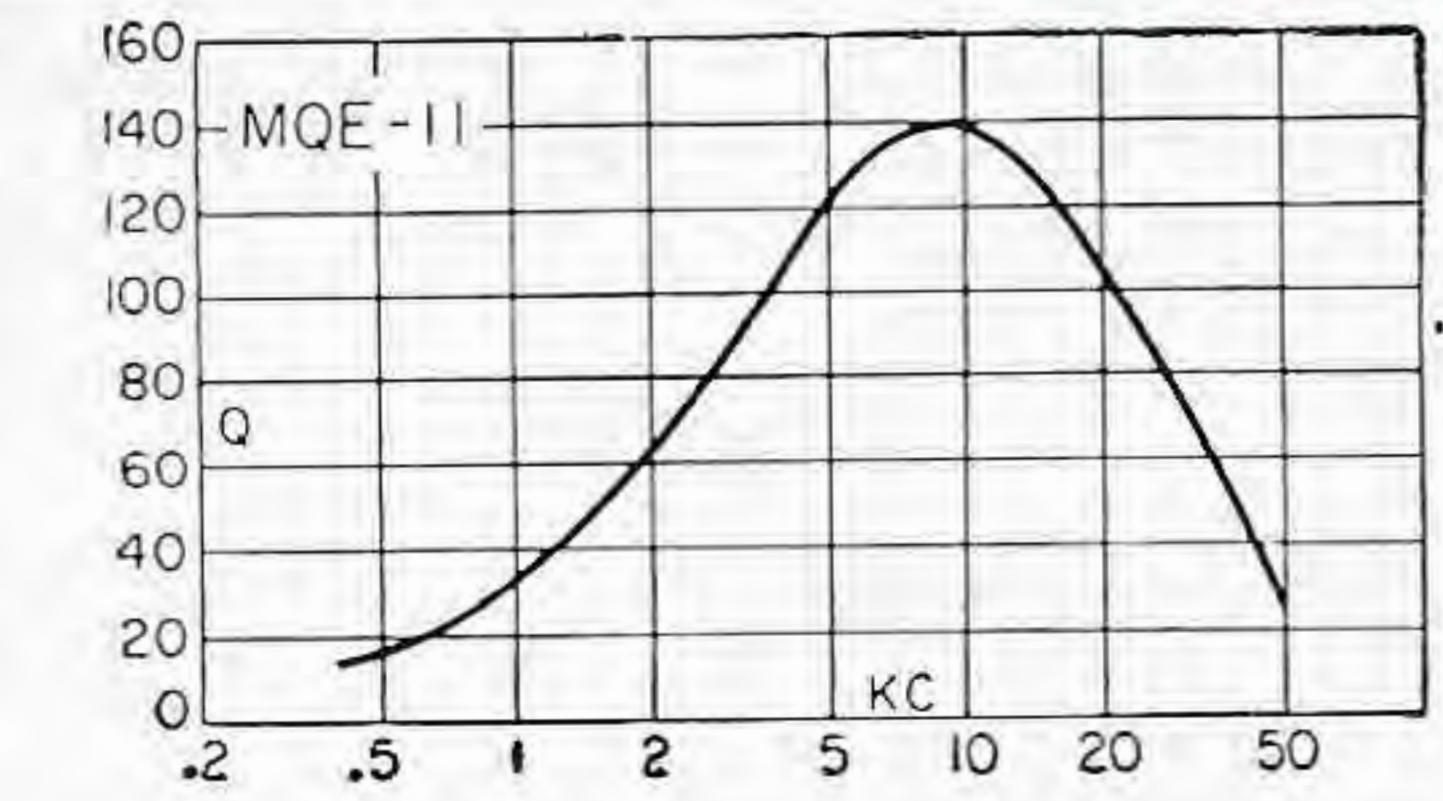
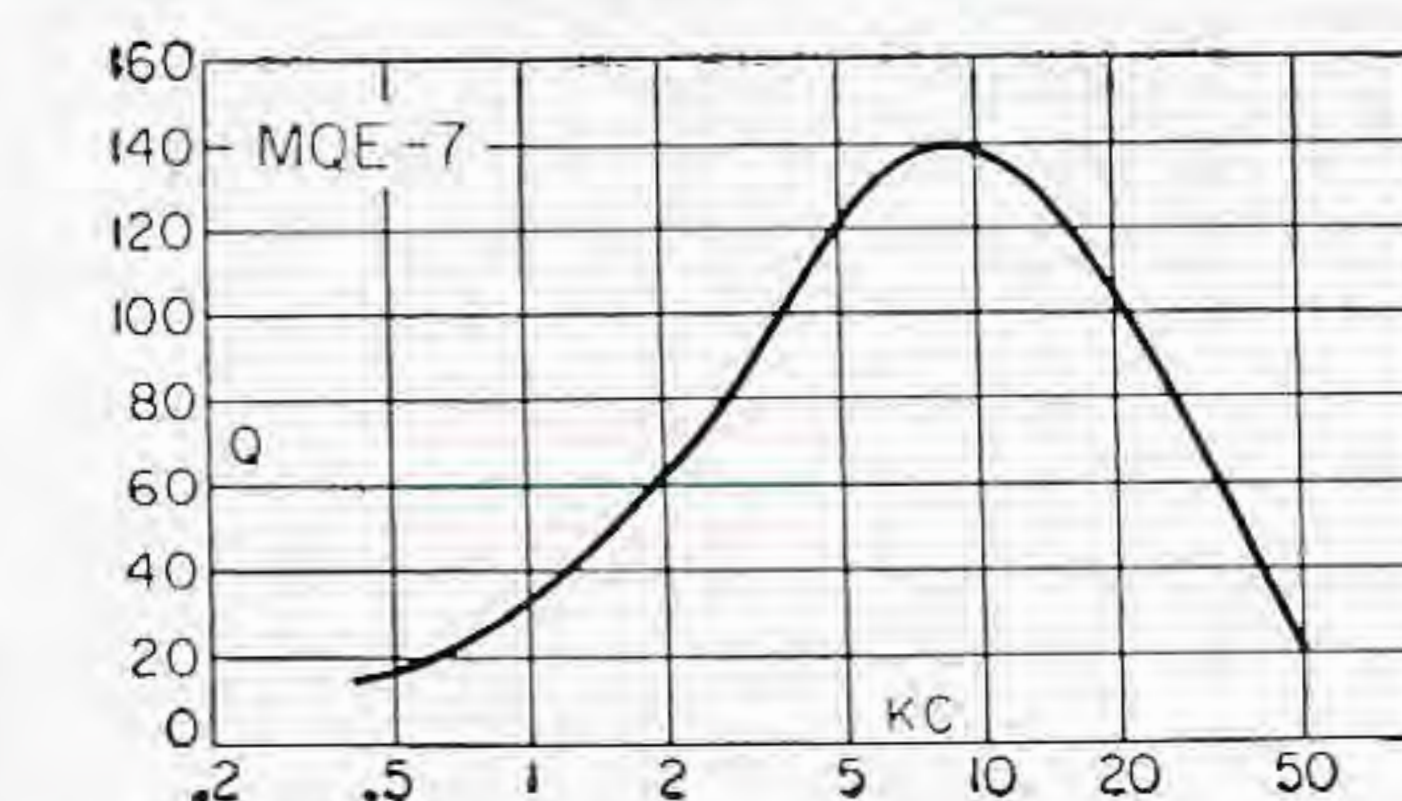
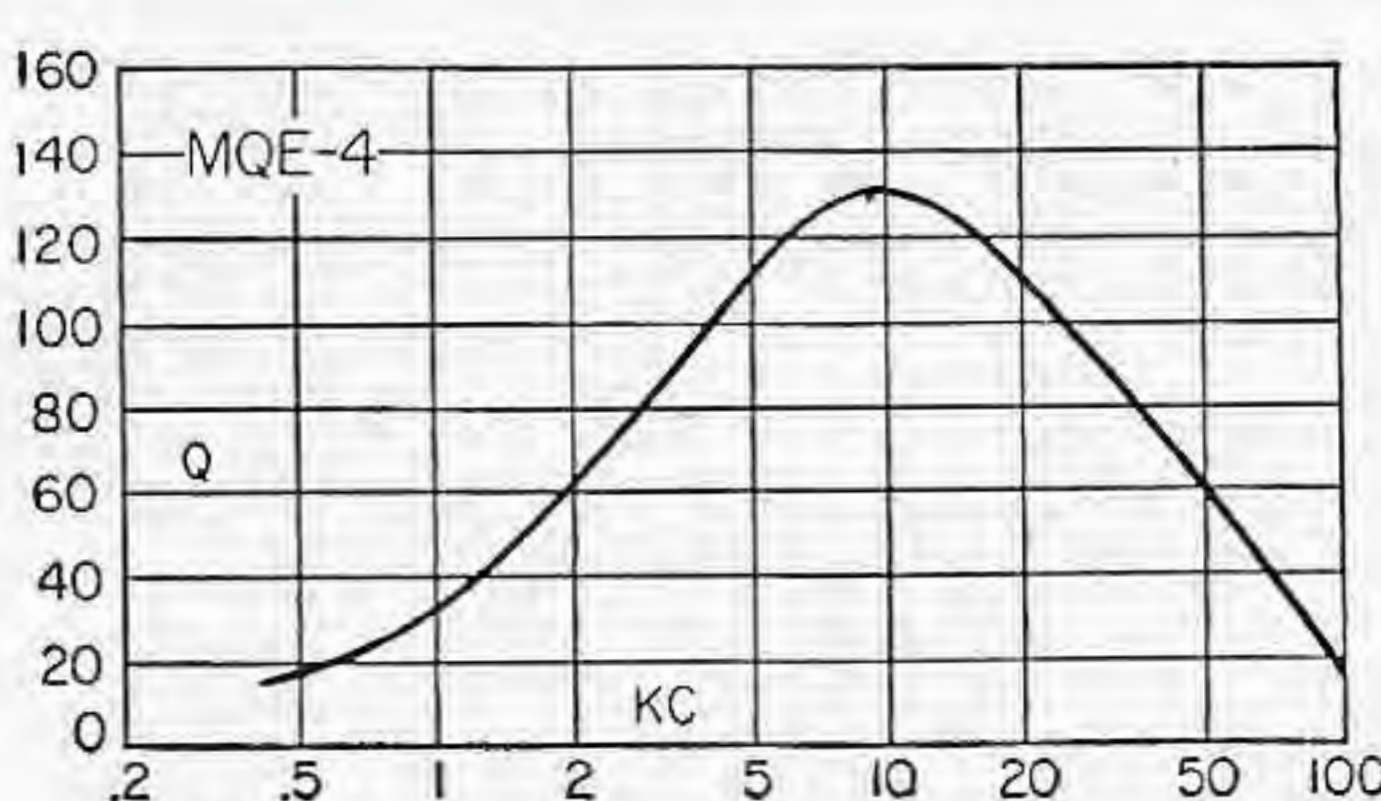
MQA



MQB



MQD



MQE



MQE CASE

Length1 1/16"
Width1/2"
Height1 1/32"
Mounting3/4"
Screws4-40
Cutout3/16 x 1/2"
Unit Weight1.5 oz.



MQA, MQD, TQA CASE

Length1 1/32"
Width1 1/16"
Height1 23/32"
Mounting7/8 x 3/32"
Screws4-40
Cutout3/16 x 1/2"
(TQA, 3/16 x 3/4")
Unit Weight4 oz.



MQB CASE

Length2 3/16"
Width1 1/16"
Height2 13/16"
Mounting2 1/16 x 1 1/16"
Screws6-32
Cutout7/8 x 1/2"
Unit Weight14 oz.

volts. DC is permissible through the coil (values listed below). Inductance is virtually independent of frequency, temperature and vibration.

Hum pickup is extremely low due to the toroidal winding structure, with windings uniformly spread over the core. The case is of high permeability, affording additional shielding such that close spacing of units can be effected, the coupling attenuation being approximately 80 db.

TQA units are similar to MQA but centertapped for oscillator applications, etc. They employ an extremely stabilized structure for wide temperature range. Q is slightly lower than MQA.

MQA and TQA TYPES

Type No.	Inductance (O DC)	DC MA Max.	Center Tapped Type No.
MQA-1	7 mhy.	250	TQA-1
MQA-2	12 mhy.	200	TQA-2
MQA-3	20 mhy.	150	TQA-3
MQA-4	30 mhy.	125	TQA-4
MQA-5	50 mhy.	100	TQA-5
MQA-6	70 mhy.	80	TQA-6
MQA-7	120 mhy.	60	TQA-7
MQA-8	.2 hy.	50	TQA-8
MQA-9	.3 hy.	40	TQA-9
MQA-10	.5 hy.	30	TQA-10
MQA-11	.7 hy.	25	TQA-11
MQA-12	1 hy.	20	TQA-12
MQA-13	1.5 hy.	17	TQA-13
MQA-14	2.5 hy.	13	TQA-14
MQA-15	4 hy.	10	TQA-15
MQA-16	6 hy.	9	TQA-16
MQA-17	10 hy.	7	TQA-17
MQA-18	15 hy.	5	TQA-18
MQA-19	22 hy.	4	TQA-19

MQB TYPES

Type No.	Inductance (O DC)	DC MA Max.
MQB-1	10 mhy.	400
MQB-2	30 mhy.	250
MQB-3	70 mhy.	170
MQB-4	120 mhy.	120
MQB-5	.5 hy.	60
MQB-6	1 hy.	40
MQB-7	2 hy.	30
MQB-8	3.5 hy.	22
MQB-9	7.5 hy.	16
MQB-10	12 hy.	11
MQB-11	18 hy.	9
MQB-12	25 hy.	8

MQE TYPES

Type No.	Inductance (O DC)	DC MA Max.
MQE-1	7 mhy.	135
MQE-2	12 mhy.	100
MQE-3	20 mhy.	80
MQE-4	30 mhy.	65
MQE-5	50 mhy.	50
MQE-6	70 mhy.	40
MQE-7	100 mhy.	35
MQE-8	150 mhy.	30
MQE-9	.25 hy.	22
MQE-10	.4 hy.	17
MQE-11	.6 hy.	14
MQE-12	.9 hy.	12
MQE-13	1.5 hy.	9
MQE-14	2 hy.	8
MQE-15	2.8 hy.	7.2

MQD TYPES

These high frequency coils are extremely stabilized type for temperature range from -40° C to +85° C.

Inductance (O DC)

MQD-1	2 mhy.
MQD-2	3 mhy.
MQD-3	5 mhy.
MQD-4	7 mhy.
MQD-5	12 mhy.
MQD-6	20 mhy.

The DC MA Max. shown will drop the coil inductance slightly.



VARIDUCTORS

HVC AND TVC HERMETIC VARIDUCTORS

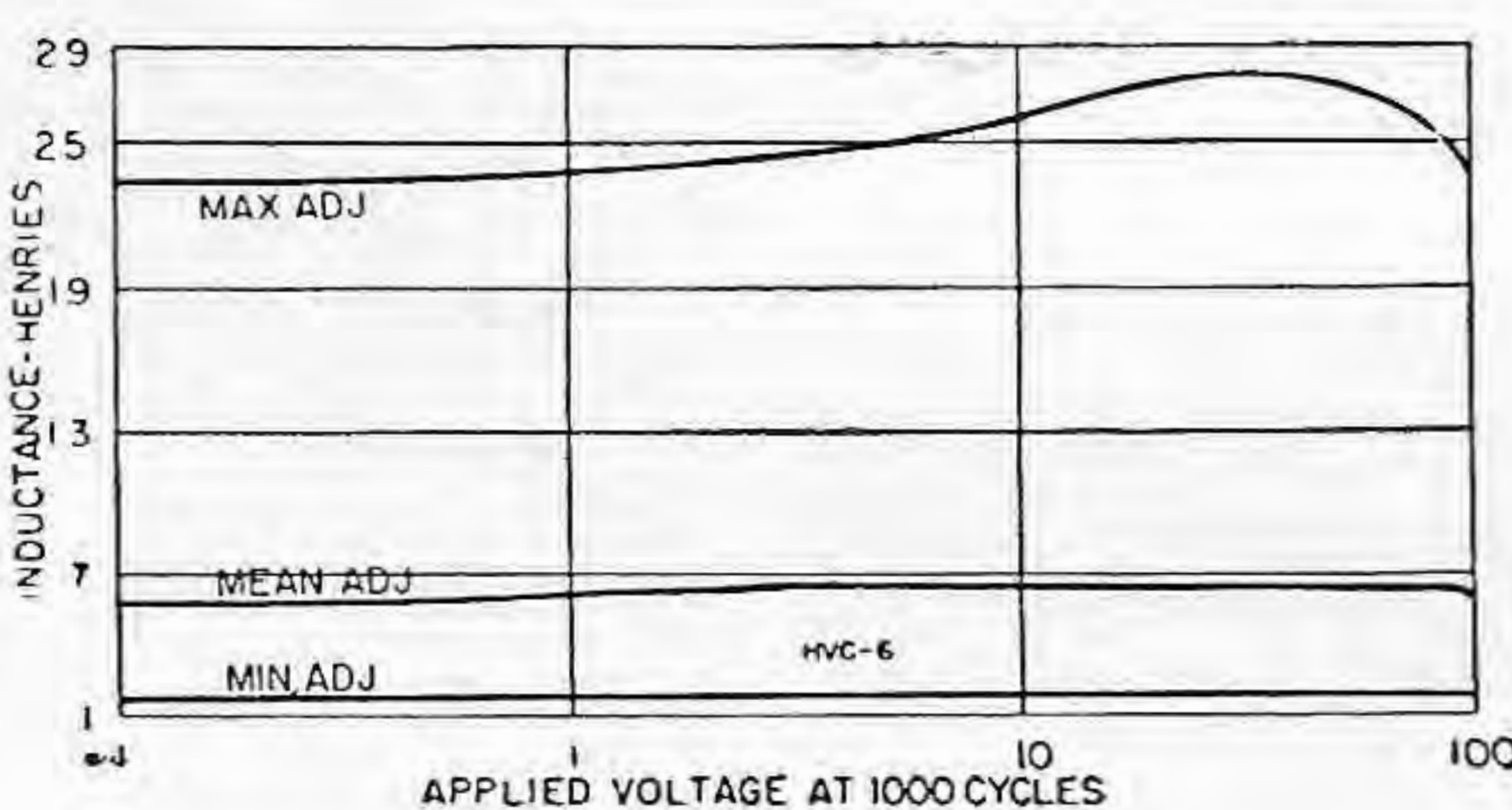
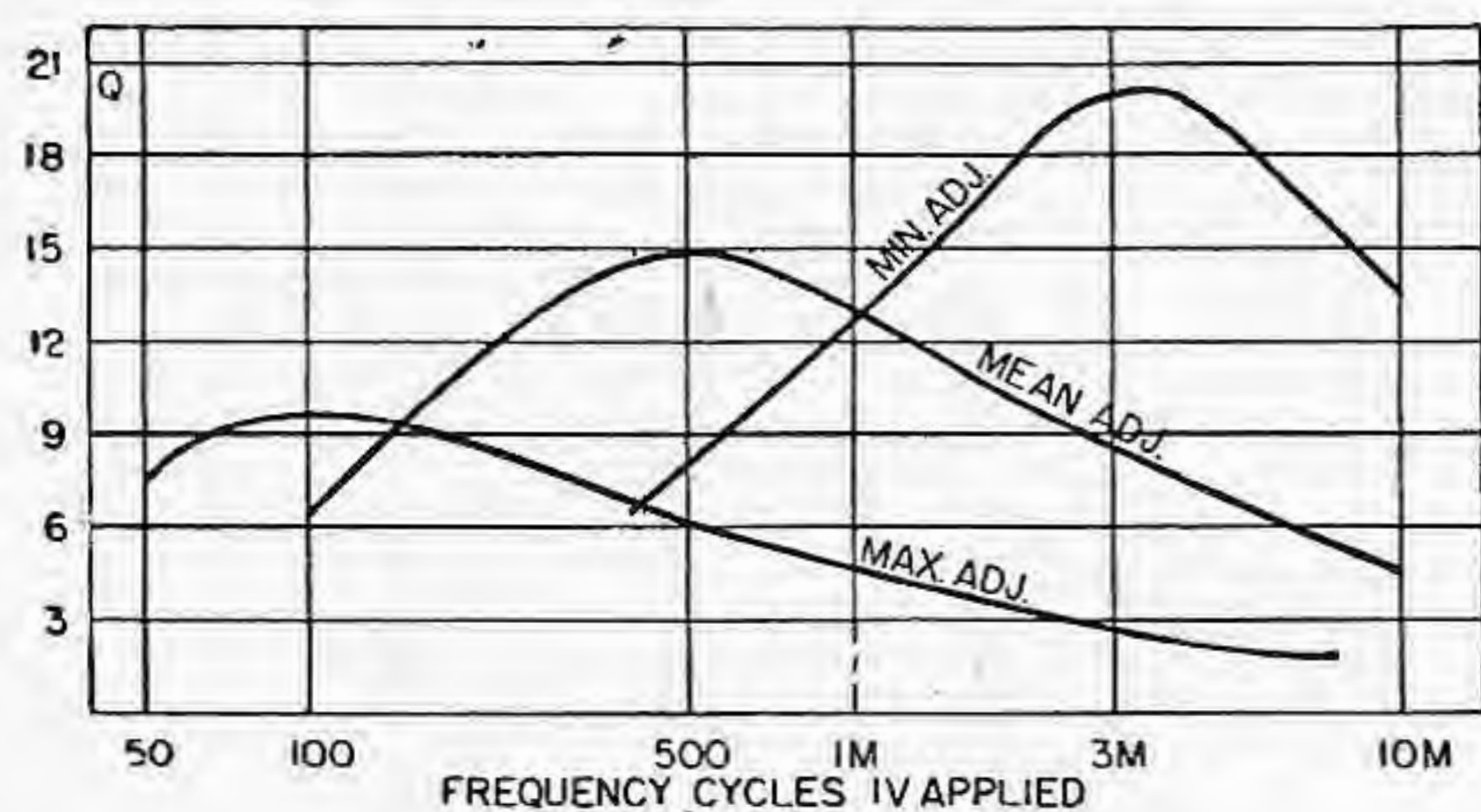
Variable inductors hermetically sealed to MIL-T-27A Specs., see back cover . . . all units MIL type TF4RX20YY.

UTC Variductors have served as a simple solution to tuned circuit problems for over 15 years . . . for oscillators, equalizers, filters, etc.

HVC Inductors are hermetically sealed to MIL-T-27A and provide exceptionally wide inductance range with high Q in an extremely compact unit. HVC units are usable over a wide frequency range and have high stability with temperature and voltage change.

TVC Inductors are identical to the HVC units but provide taps at 30% and 50% of total turns. They are ideal for oscillator circuits, impedance matching, and phase inversion where high Q and adjustable inductance are required.

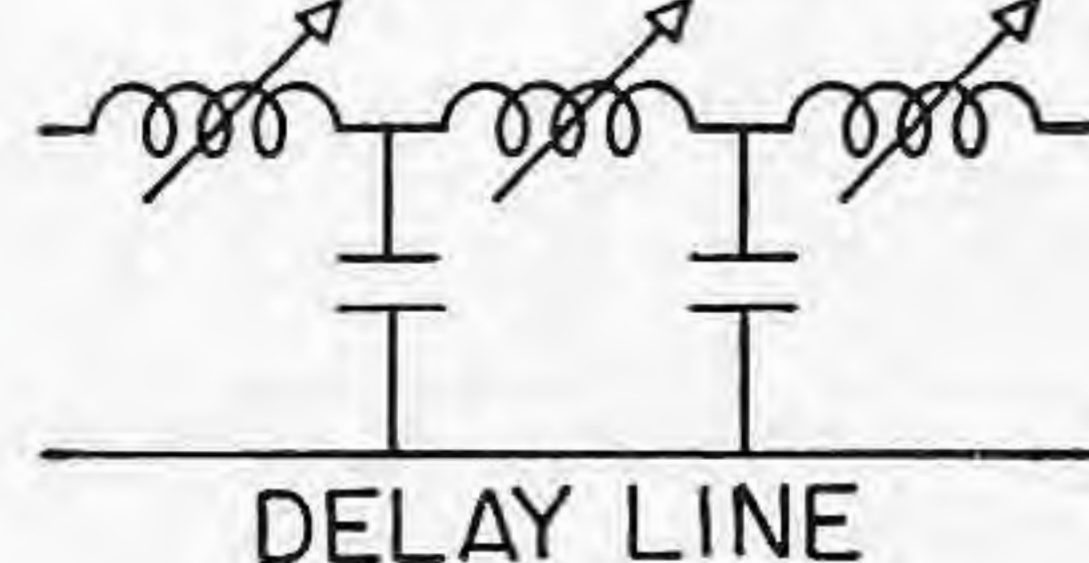
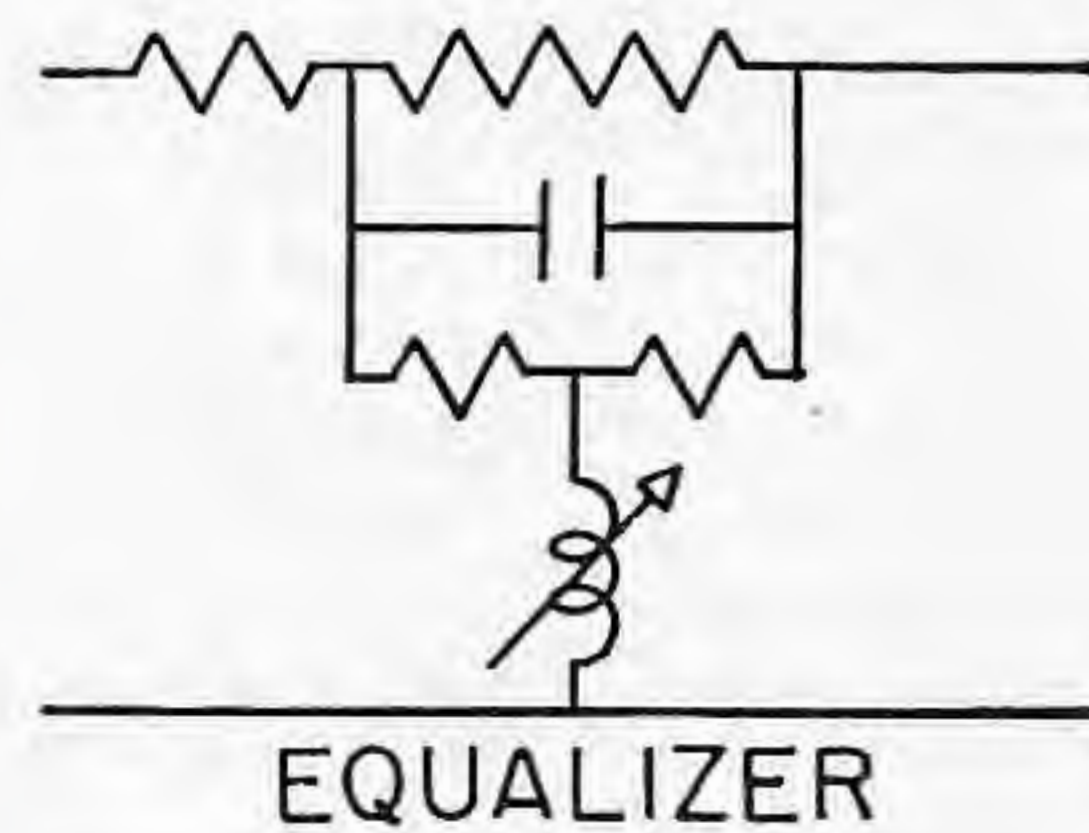
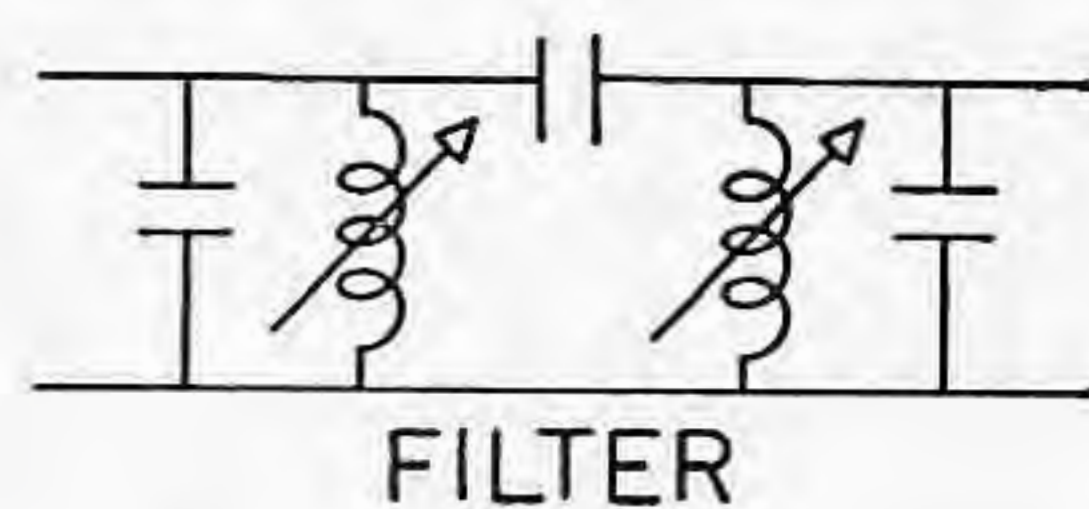
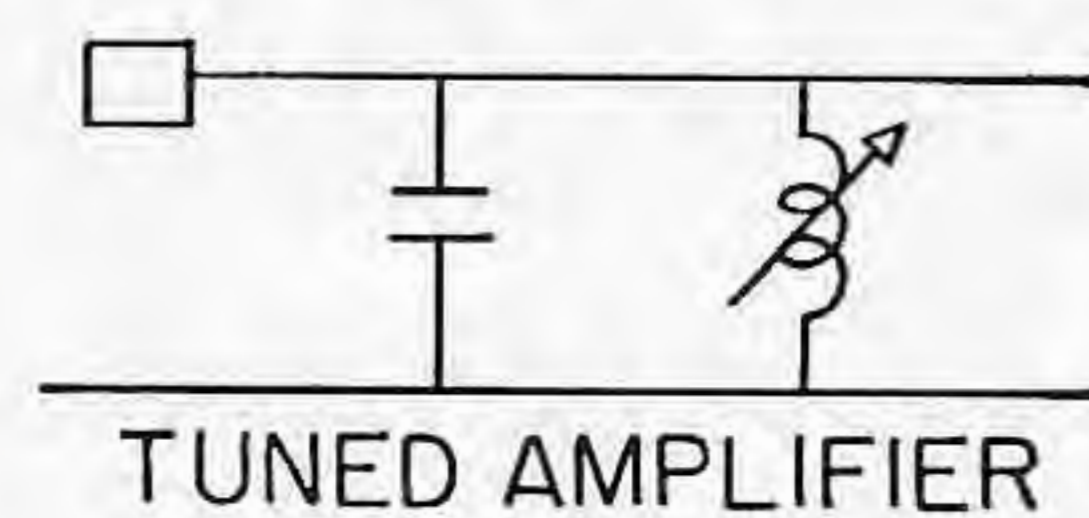
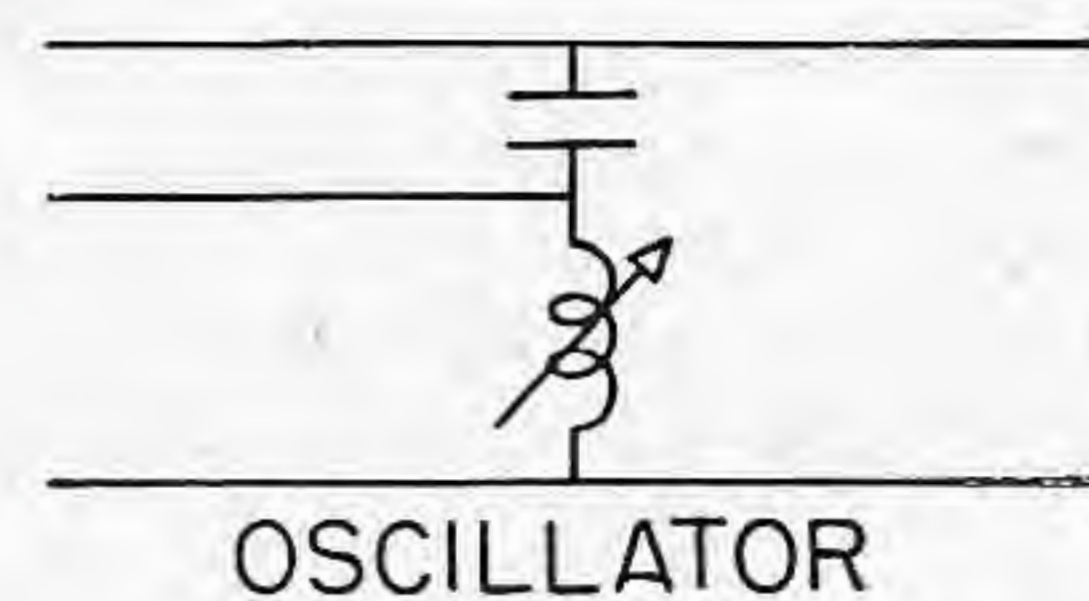
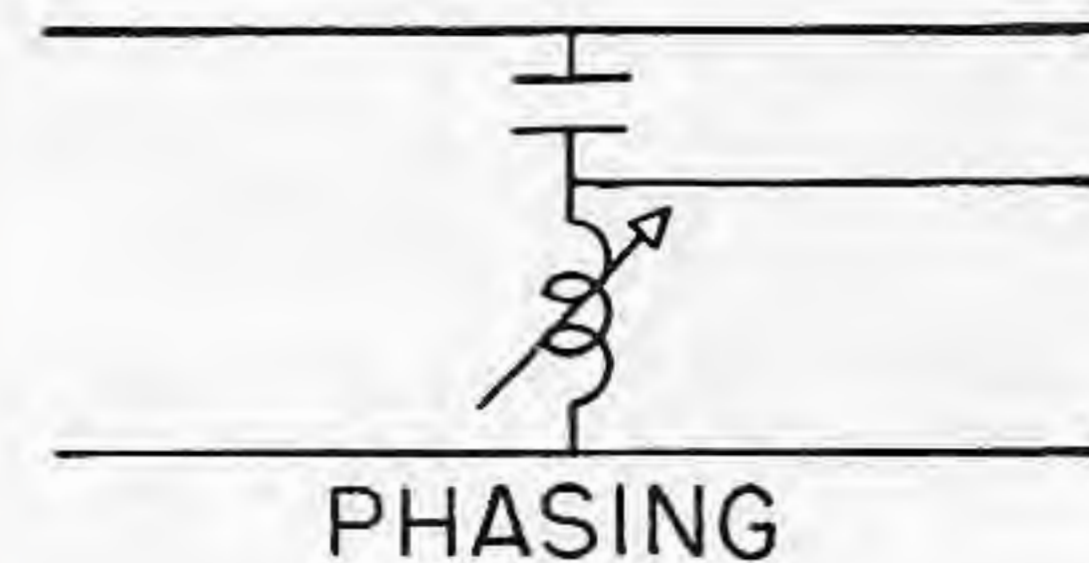
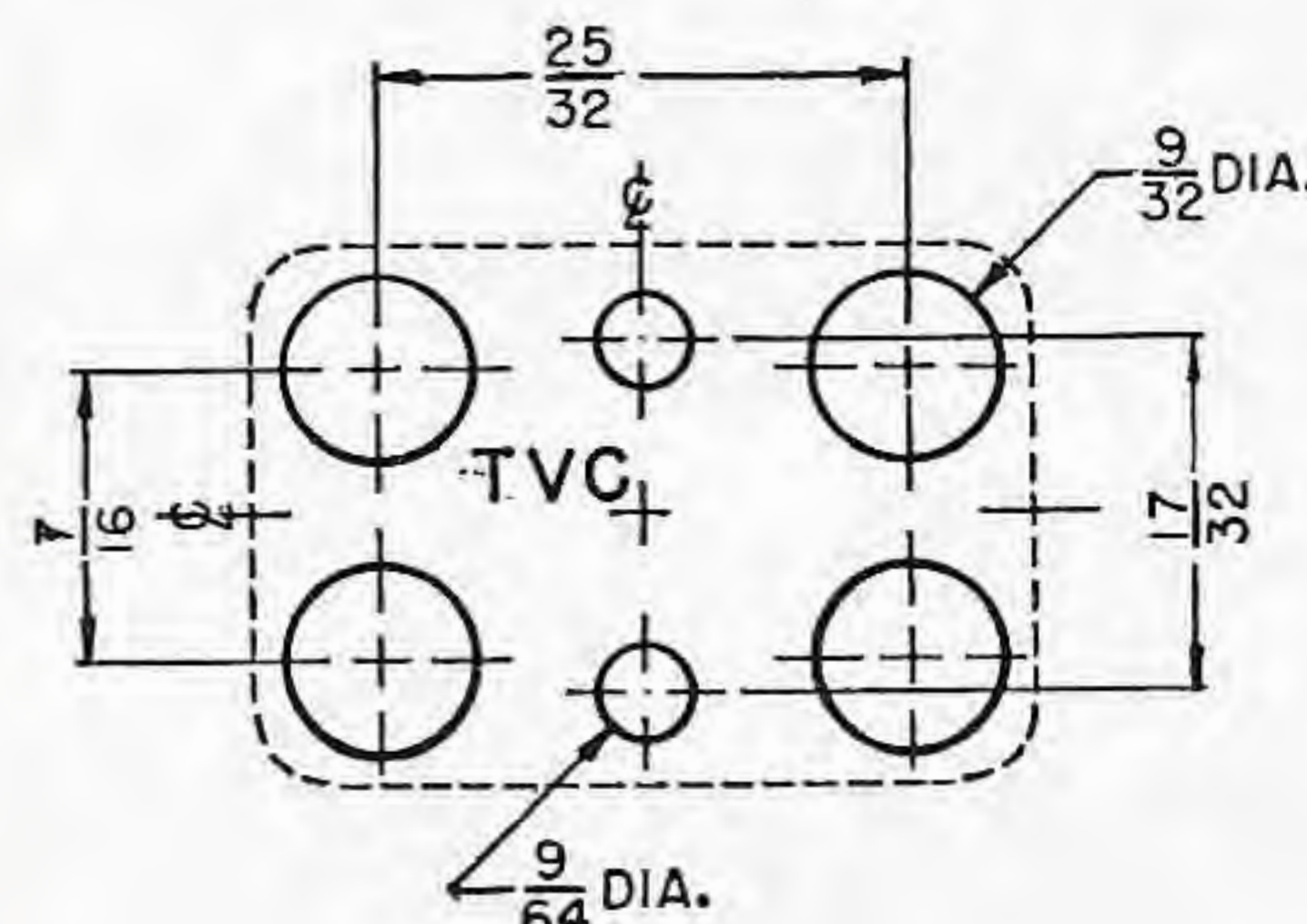
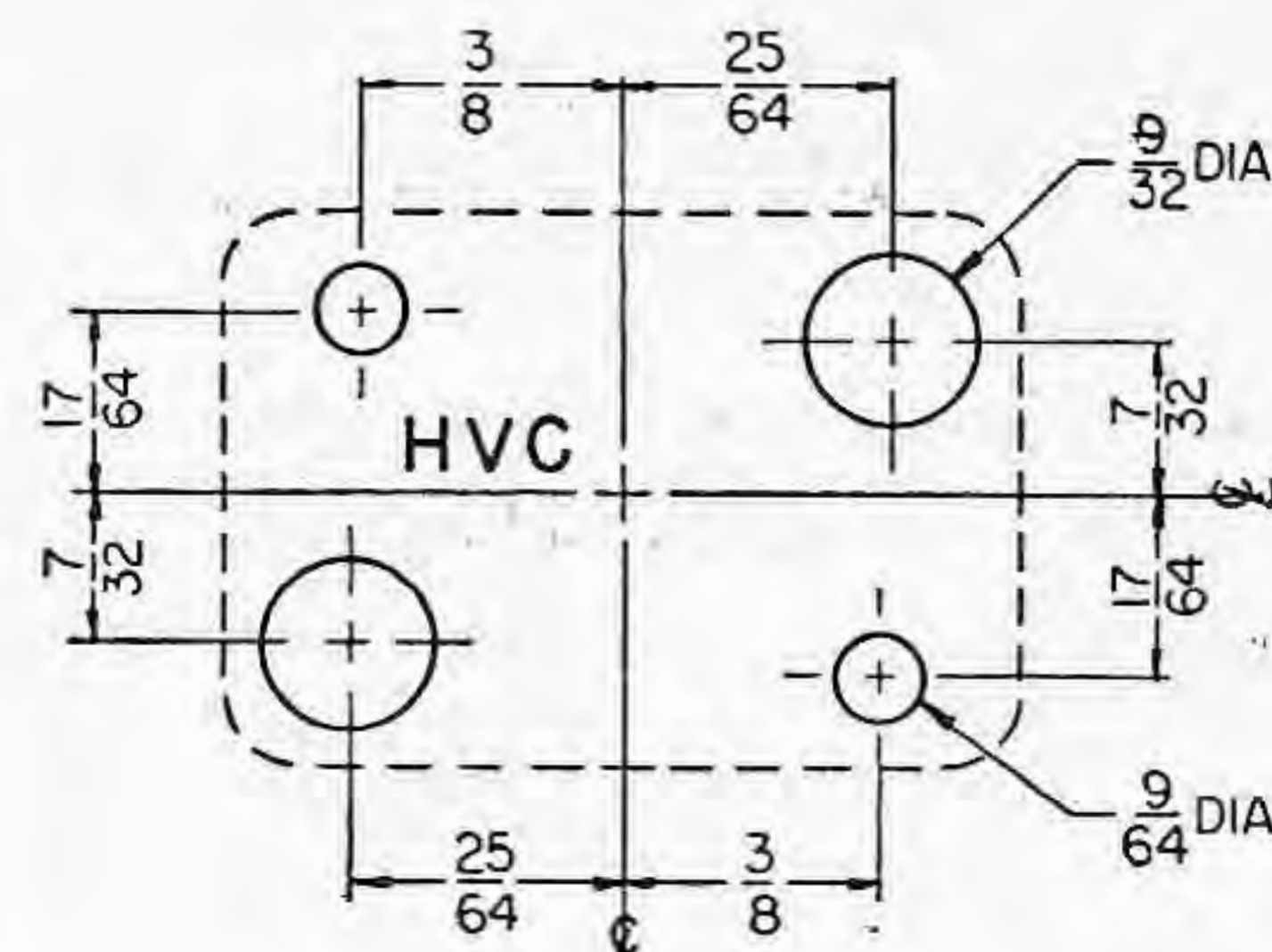
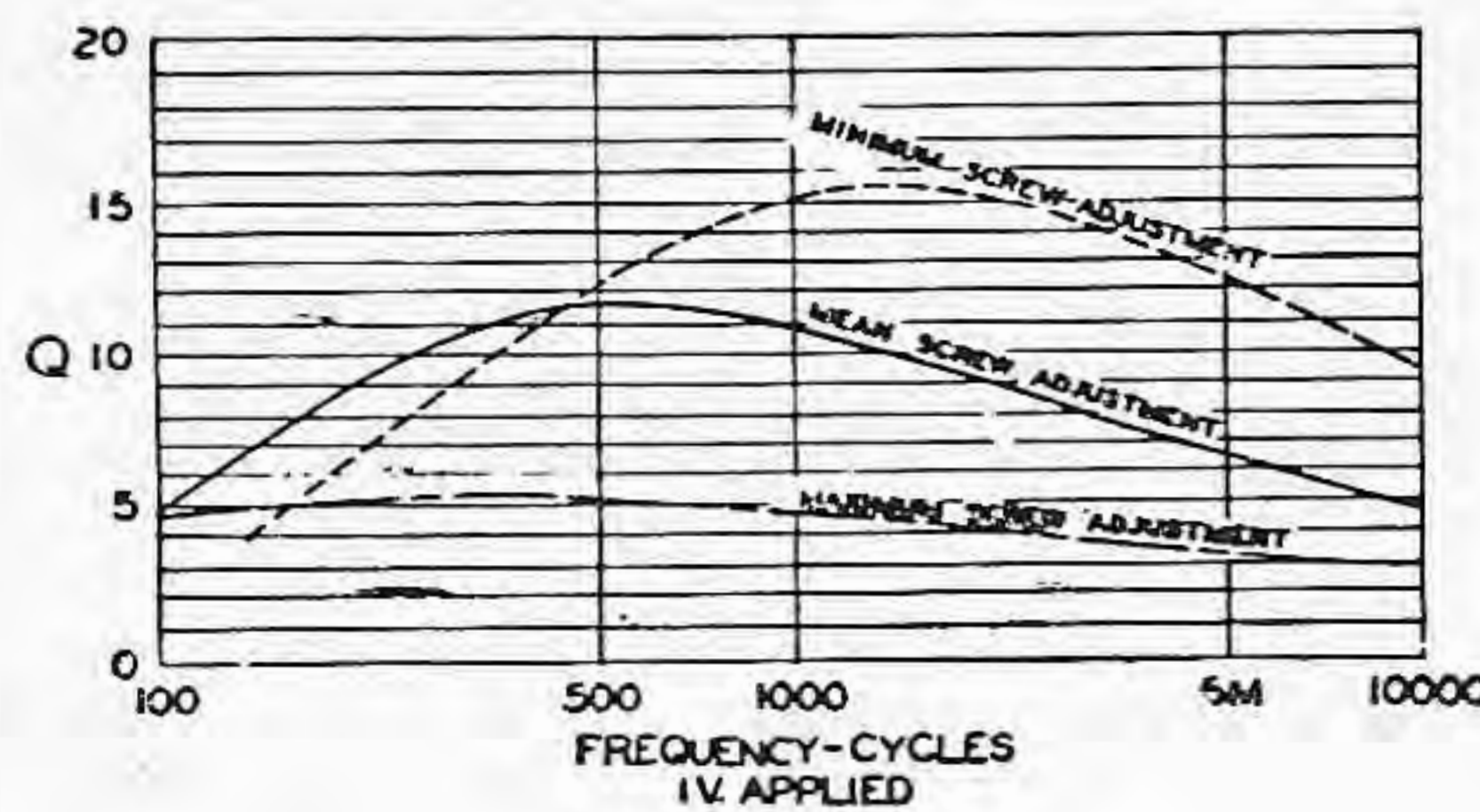
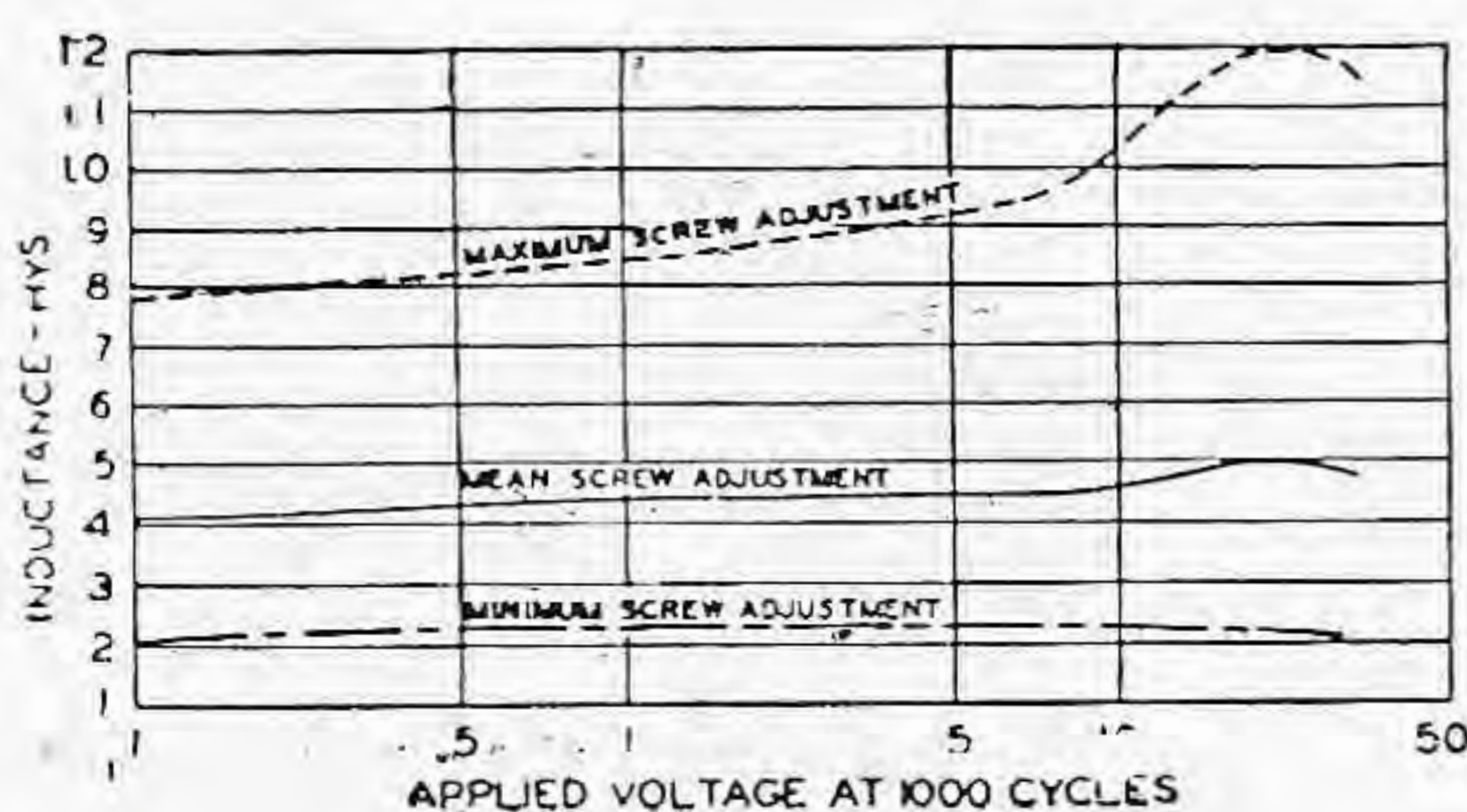
Inductance range is + 200%, -70% of nominal value through adjusting screw on top of case. Range is covered in 900° rotation. Setting is positive. Effective Q over a wide frequency range and variation of inductance with applied AC voltage are illustrated for a typical HVC unit. Case dimensions are 1 1/8" long, 2 1/2" wide, 1 1/2" high . . . weight 2 ounces. Chassis cut-out dimensions for HVC and TVC units are illustrated, 9/64" dia. holes are to clear the 4-40 stainless mounting studs.



VIC STANDARD VARIDUCTORS

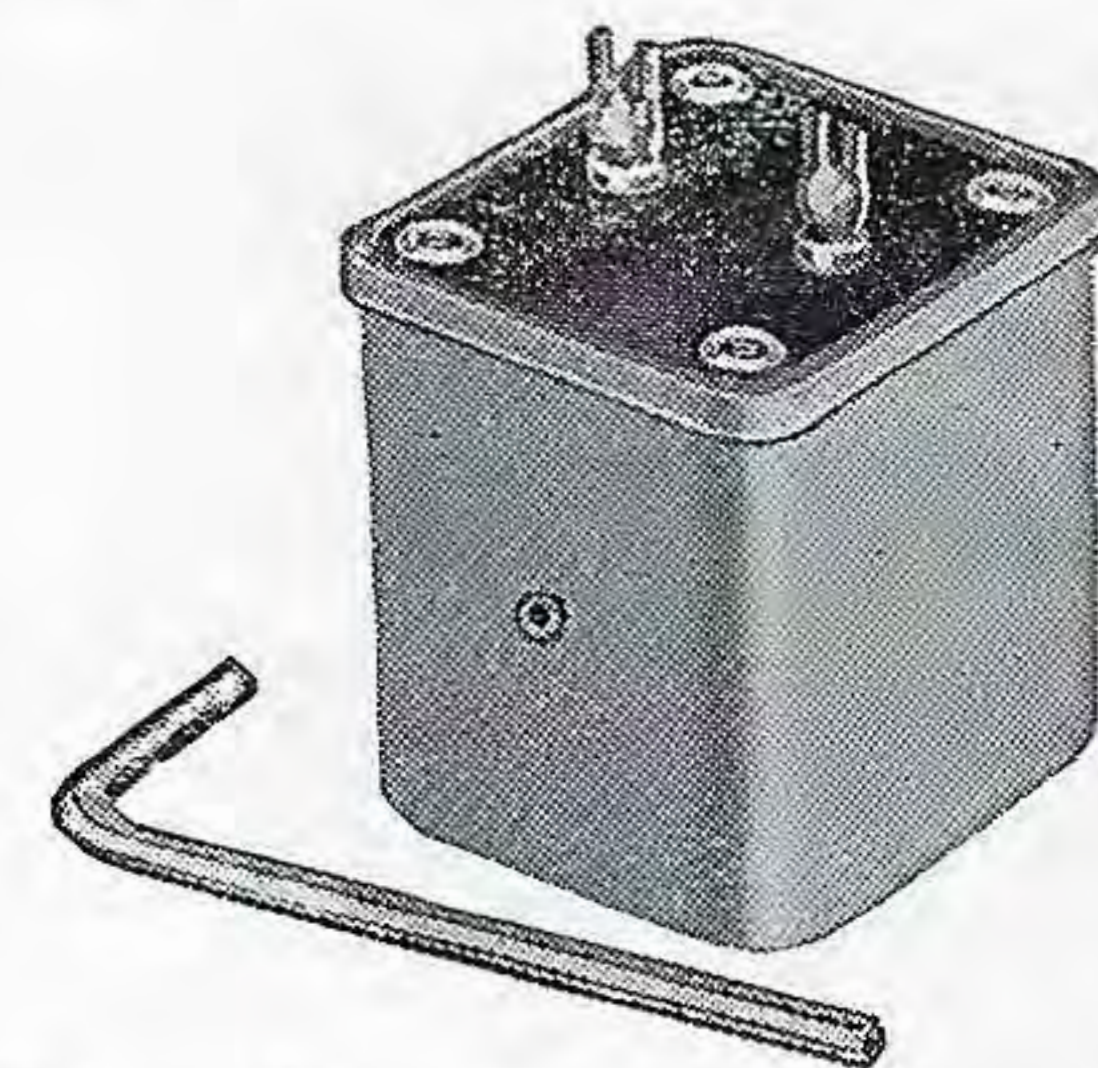
UTC type VIC variable inductors offer a convenient approach to the problem of tuned audio circuits. By adjusting a set screw in the side of the case, an inductance value of +85%, -45% from mean value is obtainable. Range is covered in 600° rotation. Setting is positive. Effective Q for a wide frequency range and variation of inductance with applied AC voltage are shown on the illustrated curves, for a typical VIC unit.

The VIC inductor is housed in a rugged die cast case 1-11/32" long, 1 1/4" wide and 1-7/16" high with mounting centers on terminal board side 13/16" by 29/32", tapped for 4-40 screw. Weight is 5 1/2 oz.



Type No.	Min. Hys.	Mean Hys.	Max. Hys.	DC* Ma.	Tapped Type No.
HVC-1	.002	.006	.02	100	TVC-1
HVC-2	.005	.015	.05	60	TVC-2
HVC-3	.011	.040	.11	40	TVC-3
HVC-4	.03	.1	.3	30	TVC-4
HVC-5	.07	.25	.7	20	TVC-5
HVC-6	.2	.6	2	15	TVC-6
HVC-7	.5	1.5	5	10	TVC-7
HVC-8	1.1	4	11	7	TVC-8
HVC-9	3	10	30	5	TVC-9
HVC-10	7	25	70	3.5	TVC-10
HVC-11	20	60	200	2	TVC-11
HVC-12	50	150	500	1.5	TVC-12

Choosing Type No.: If frequency is above 100 cycles use type providing required inductance between mean and min. values.



Type	Mean Hys.	DC Ma*	Type	Mean Hys.	DC Ma*
VIC-1	.0085	75	VIC-12	1.3	10
VIC-2	.013	60	VIC-13	2.2	8
VIC-3	.021	50	VIC-14	3.4	7
VIC-4	.034	40	VIC-15	5.4	6
VIC-5	.053	35	VIC-16	8.5	5
VIC-6	.084	30	VIC-17	13	4
VIC-7	.13	25	VIC-18	21	3
VIC-8	.21	21	VIC-19	33	3
VIC-9	.34	18	VIC-20	52	2
VIC-10	.54	15	VIC-21	83	1
VIC-11	.85	12	VIC-22	130	1

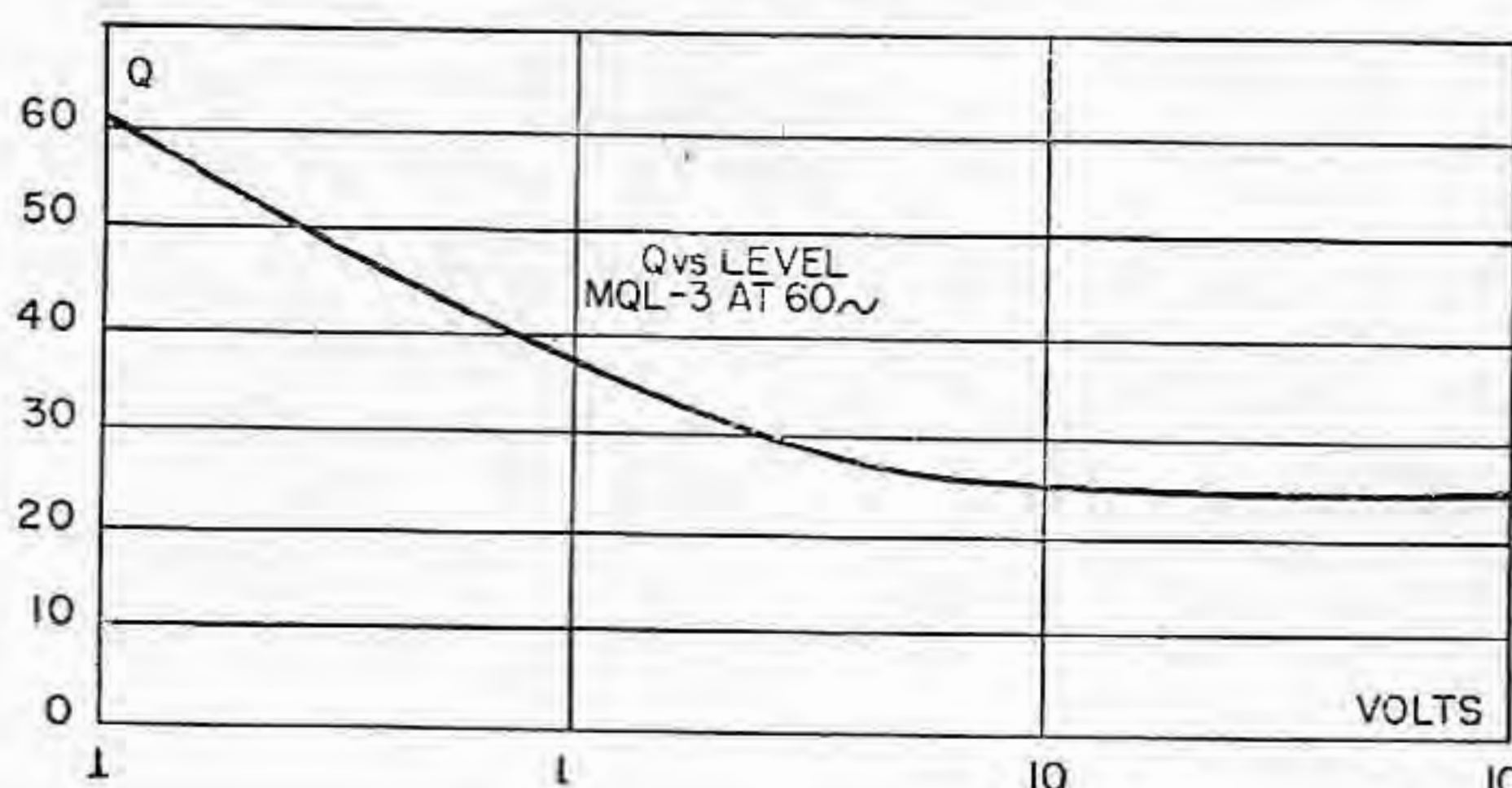
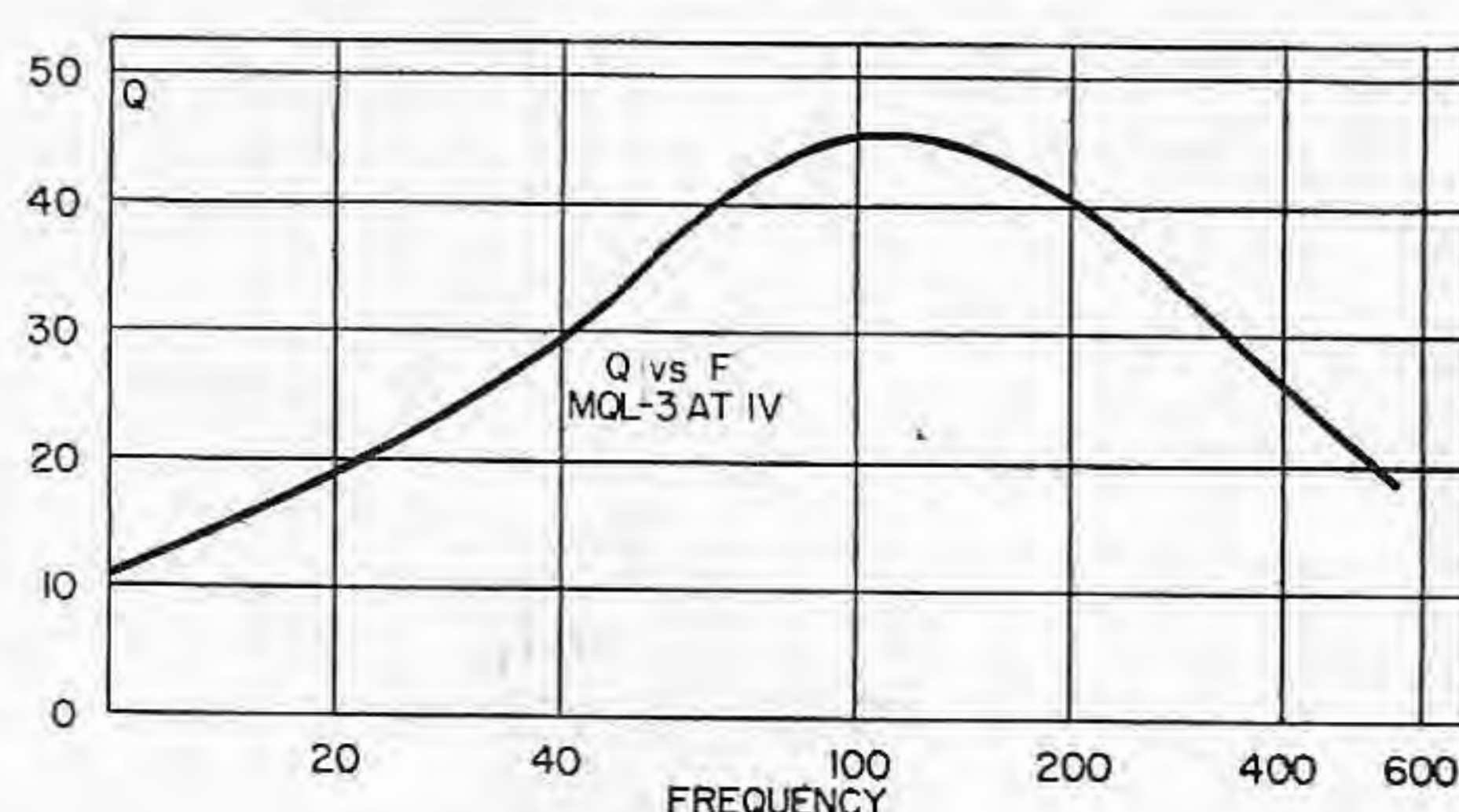
*DC MA shown is maximum recommended . . . will effect some reduction in inductance and Q.



LOW FREQUENCY HIGH Q COILS

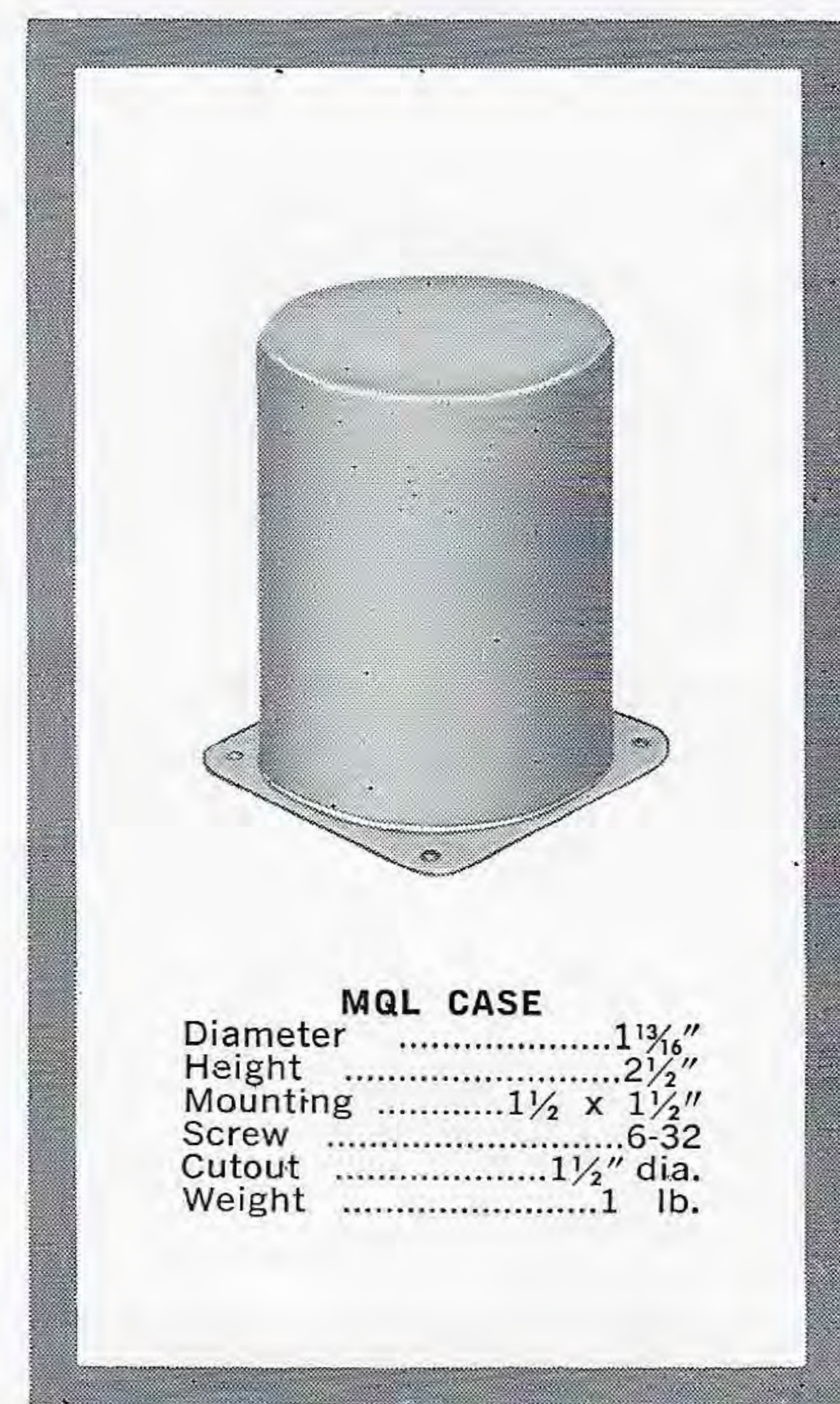
Hermetically sealed to MIL-T-27A Specs., see back cover . . . all units MIL type TF4RX20YY

Permalloy dust toroids are not suited to providing high Q at low frequencies. The MQL series of laminated Hiper-malloy coils were specifically designed for this class of service. The unique structure employed provides exceptional Q and stability. Inductance values are laboratory adjusted to 2% tolerance at 1 volt, 60 cycles. Stability with voltage is excellent, for MQL-3 inductance variation is less than 1% from .1 V. to 1 V. 60 cycles. Temperature stability is exceptional, total inductance swing being less than 3.5% for the wide range of -55°C to $+85^{\circ}\text{C}$. A hum reducing lamination structure plus heavy Hiper-malloy shielding provide very low hum pickup . . . 240 microvolts/gauss for MQL-3 series connected. Two identical windings brought out to four terminals permit series, parallel, center tapped, or transformer type connections.



Type No.	Series Henries (0 DC)	Parallel Henries (0 DC)
MQL-0	1	.25
MQL-1	10	2.5
MQL-2	20	5
MQL-3	200	50
MQL-4	400	100
MQL-5	2500	625

(For 60 cycles and lower)



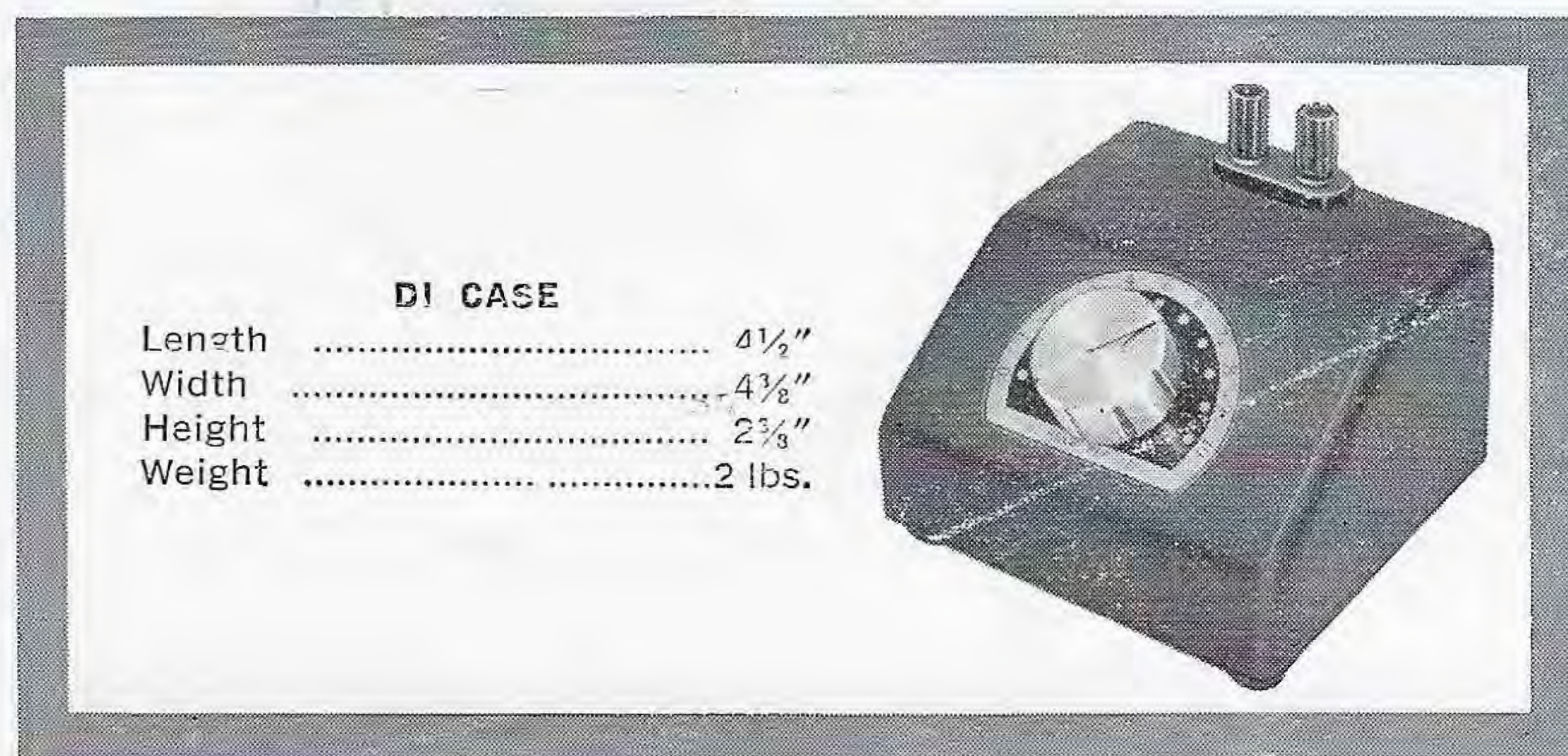
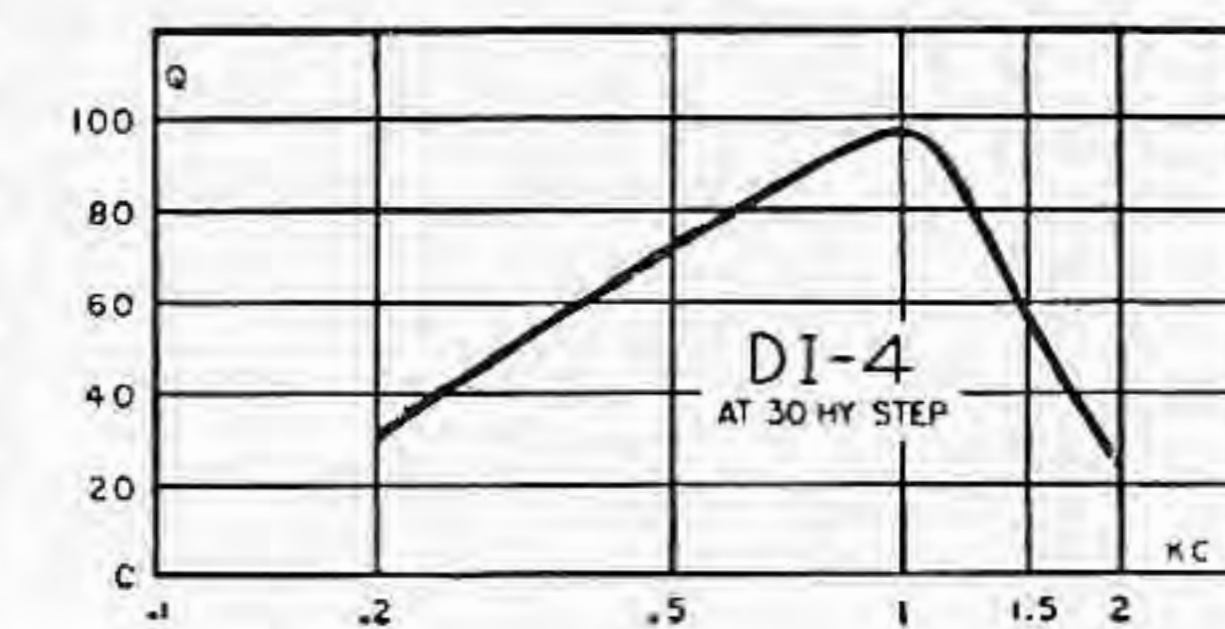
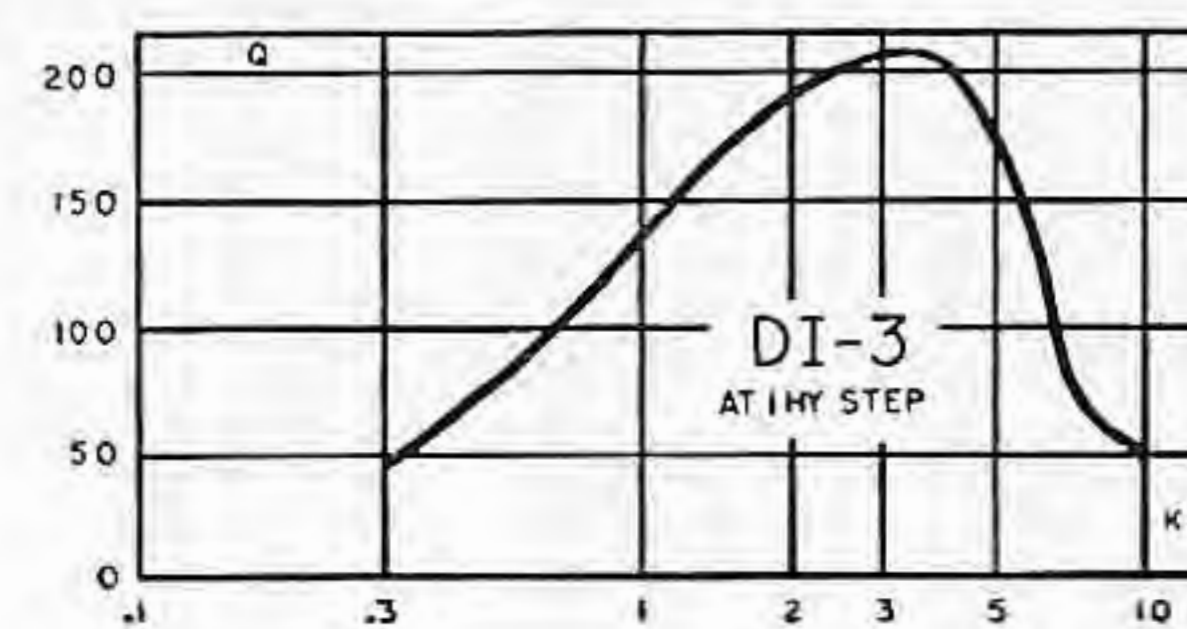
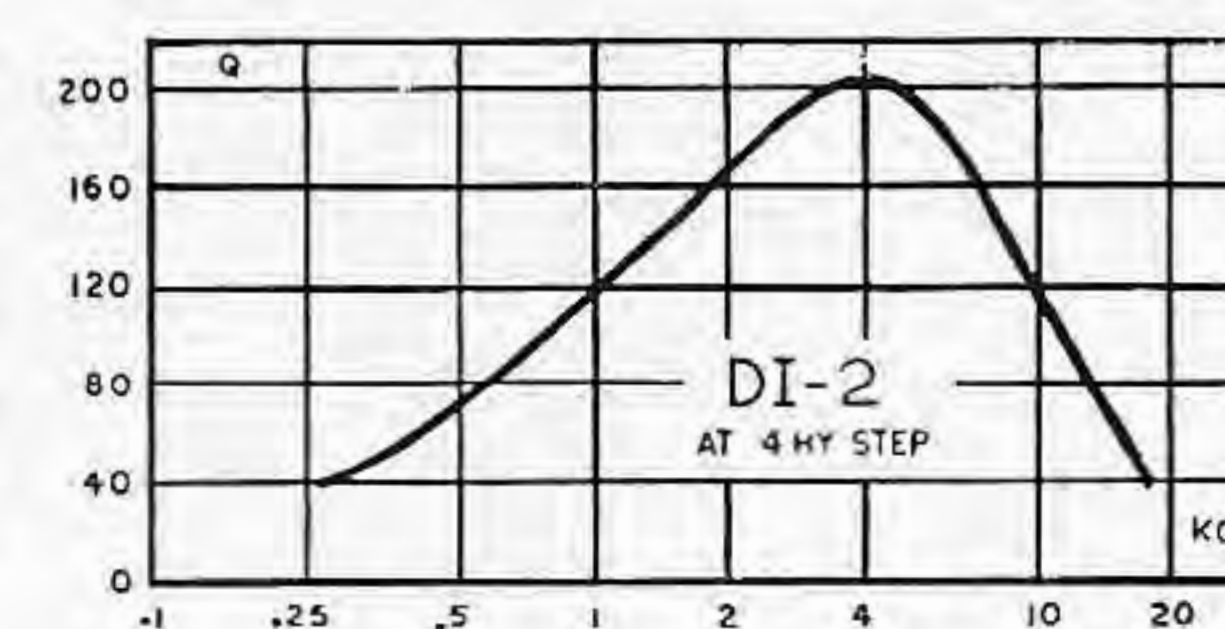
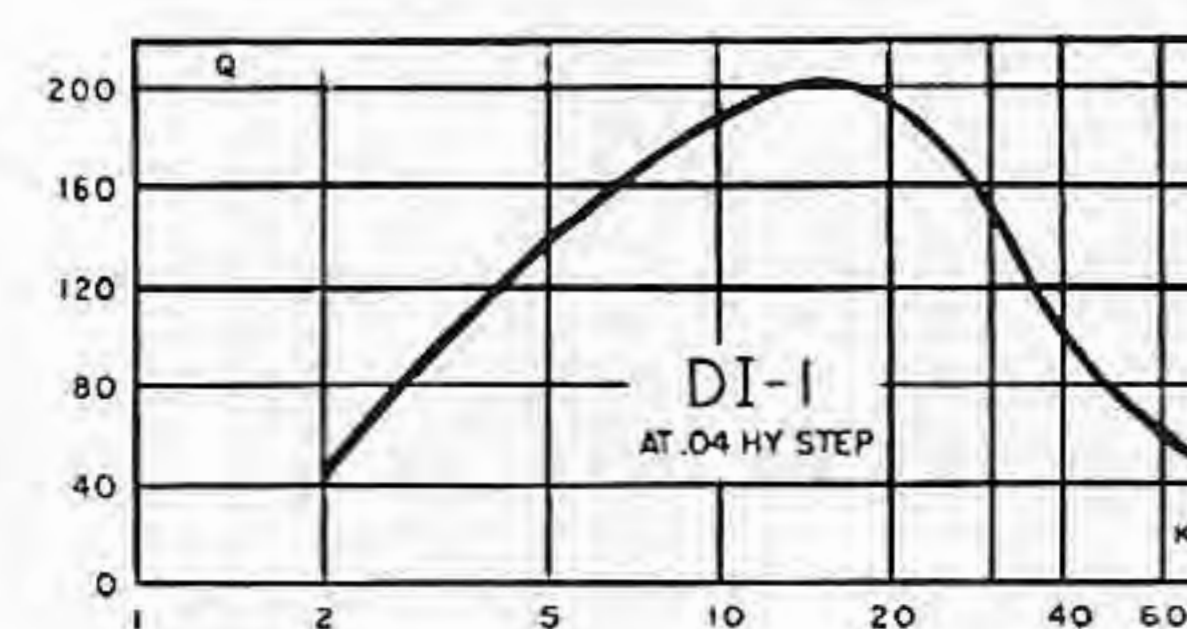
MQL CASE
 Diameter $1\frac{1}{16}$ "
 Height $2\frac{1}{2}$ "
 Mounting $1\frac{1}{2} \times 1\frac{1}{2}$ "
 Screw 6-32
 Cutout $1\frac{1}{2}$ " dia.
 Weight 1 lb.



HIGH Q PRECISION INDUCTANCE DECADES

UTC DI inductance decades are invaluable instruments for design and experimental work with tuned circuits, wave filters, and equalizers. They set new standards of Q, stability, frequency range, and convenience. The low hum pickup toroid coils employ a new permalloy dust core which, combined with special winding methods, provides very high Q, excellent voltage and temperature stability, and high self resonance frequency. The switch employed is a new low capacity type which lab tests have proven for low contact resistance after 100,000 operations. The inductance values are laboratory adjusted to better than 1% precision, with calibration noted on base.

DI inductance decades are housed in a compact, rugged, die cast case with control on a sloping panel, ideally suiting these units to laboratory use.



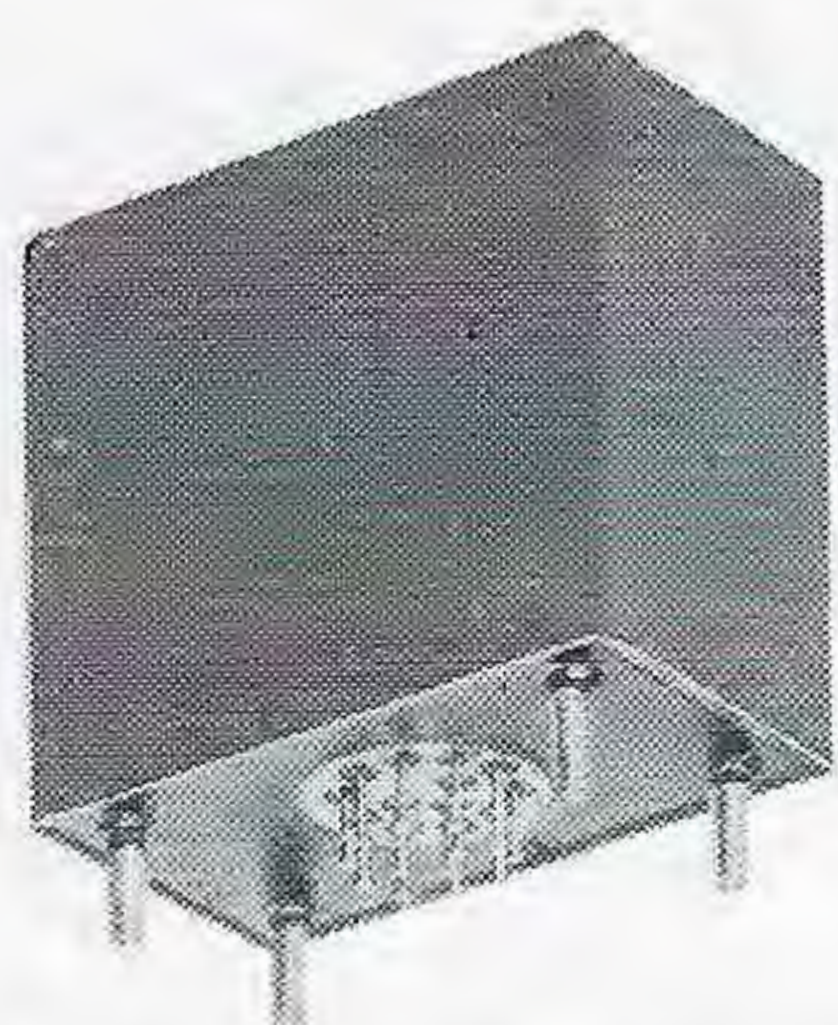
DI CASE
 Length $4\frac{1}{2}$ "
 Width $4\frac{3}{8}$ "
 Height $2\frac{3}{8}$ "
 Weight 2 lbs.

Type No.	Induct. Henries	Optimum Range	Max. Q	Max. ACMA	Ins. Test Volts RMS
DI-1	10 x .01	2-60 KC	200	500	500
DI-2	10 x .1	.25-20 KC	200	150	500
DI-3	10 x 1	.25-10 KC	200	50	500
DI-4	10 x 10	.2-1.5 KC	100	15	500



POWER TRANSFORMERS TO SPECIFICATIONS

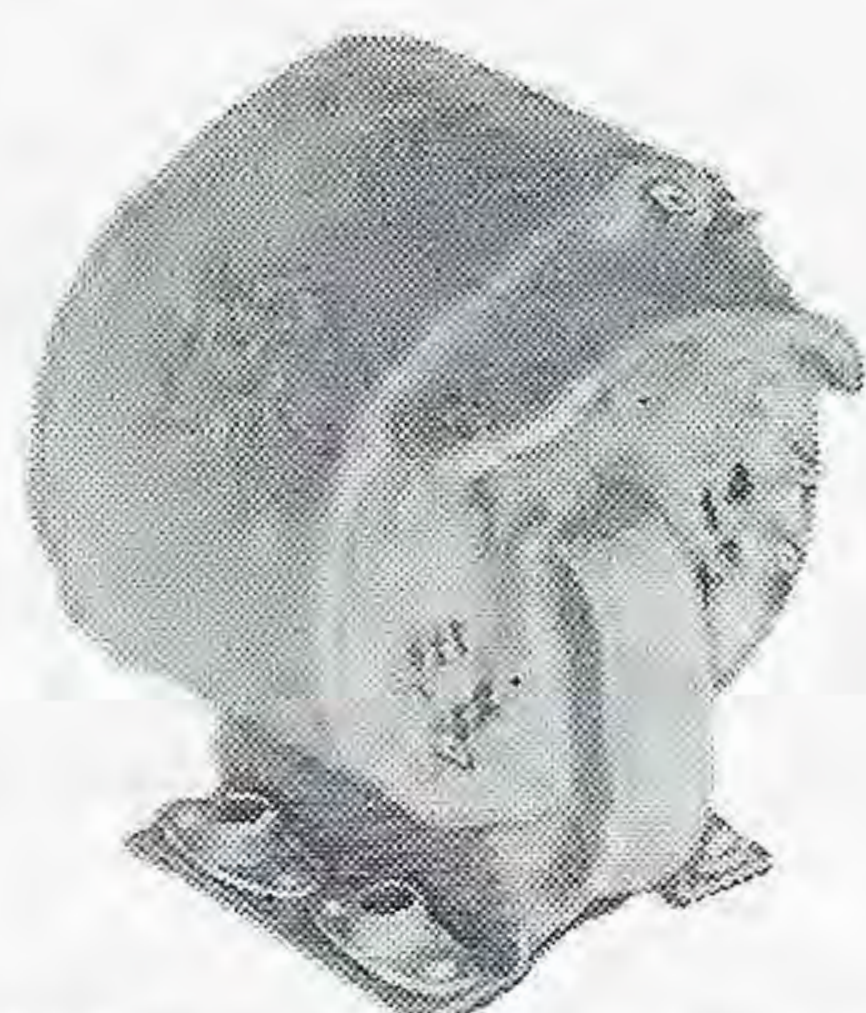
In addition to the needs met by UTC stock power components, there are many unique applications which require special units. The units illustrated below are intended to show some of the thousands of special units produced by UTC and to help provide the equipment engineer with a concept of the possibilities in present special transformer design.



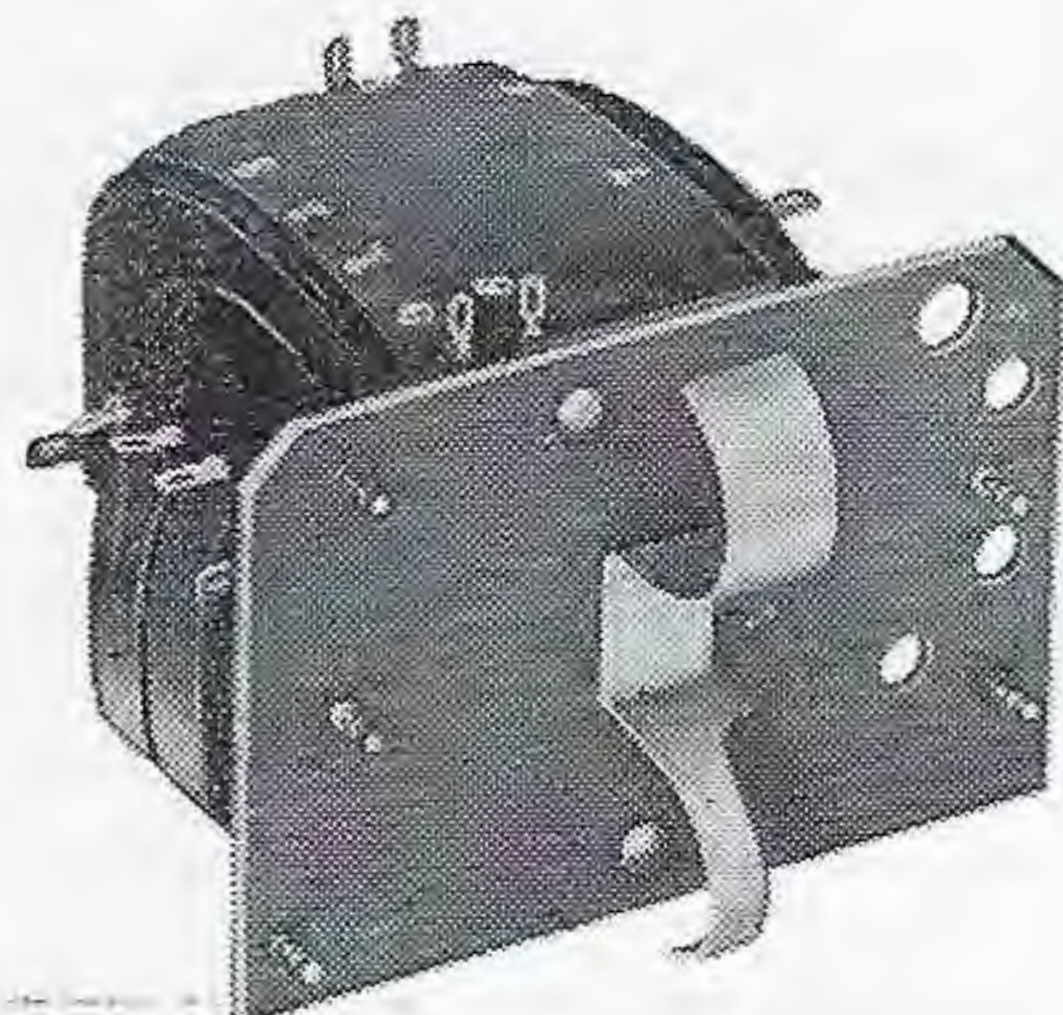
170° C. corona free power transformer. Primary 115 V., 400 cycles, 3 phase, to 400 V.-35 A., 250 V.-25 A., 130 V.-63 A. (320 V.A.). MIL-T-27A Grade 4 Class T Life X; $2\frac{1}{8}$ x $4\frac{1}{2}$ x $3\frac{1}{2}$ ", $4\frac{1}{4}$ lbs.



High temperature filament transformer. Primary 115 V., 320/1000 cycles to 5 V.-12 A. and 6.3 V.-10.5 A., 20 KV hipot. 200° C., MIL-T-27A Grade 5 Class U; $2\frac{1}{2}$ x 3 x $2\frac{3}{4}$ ", 1.1 lb.



Indicator transformer. Primary 115 V., 380/1000 cycles, five filament windings to 15 KV hipot, 5 KV and 1.6 KV high voltage windings. MIL-T-27A Grade 5 Class S; $2\frac{7}{8}$ x $2\frac{1}{2}$ x $3\frac{1}{2}$ ", 1.1 lb.



Scope power transformer with board for rectifiers. Primary 115 V., 400 cycles to two 14 KV filament windings, one 6.3 V. low capacity filament winding, 4.5 KV and 1.75 KV high voltage windings. 25 KV hipot when in oil; $2\frac{7}{8}$ x $3\frac{1}{2}$ x $2\frac{5}{8}$ ", $1\frac{1}{4}$ lbs.



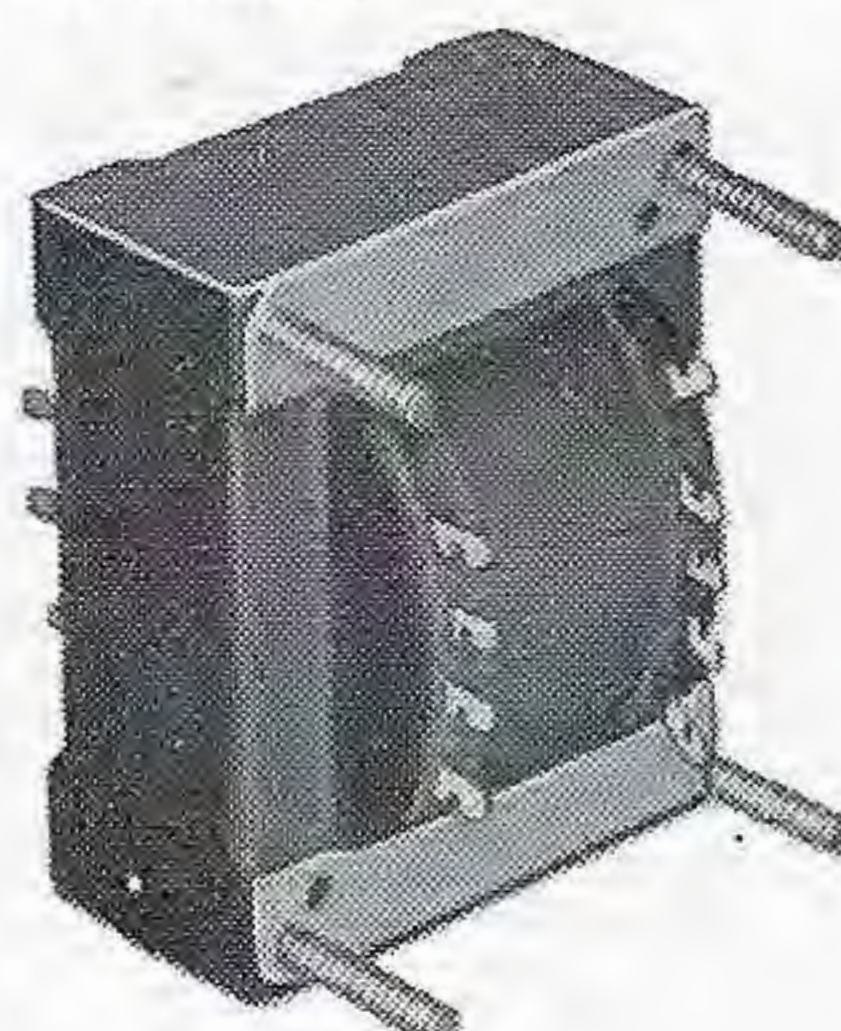
Low capacity current limiting filament transformer. Primary 118 V., 60 cycles to 6.3 V. at 3 A., 8 A. at short circuit. 25 MMFD capacity, 30 KV hipot and 200:1 capacity divider; 5 x $3\frac{3}{4}$ x $4\frac{1}{2}$ ", 9 lbs.



High temperature plate transformer. Primary 208 V., 3 phase 380/1000 cycles to 5100 V./leg, 1400 V. A. 200° C. MIL-T-27A; 6 x 3 x $4\frac{1}{2}$ ", 6 lbs.



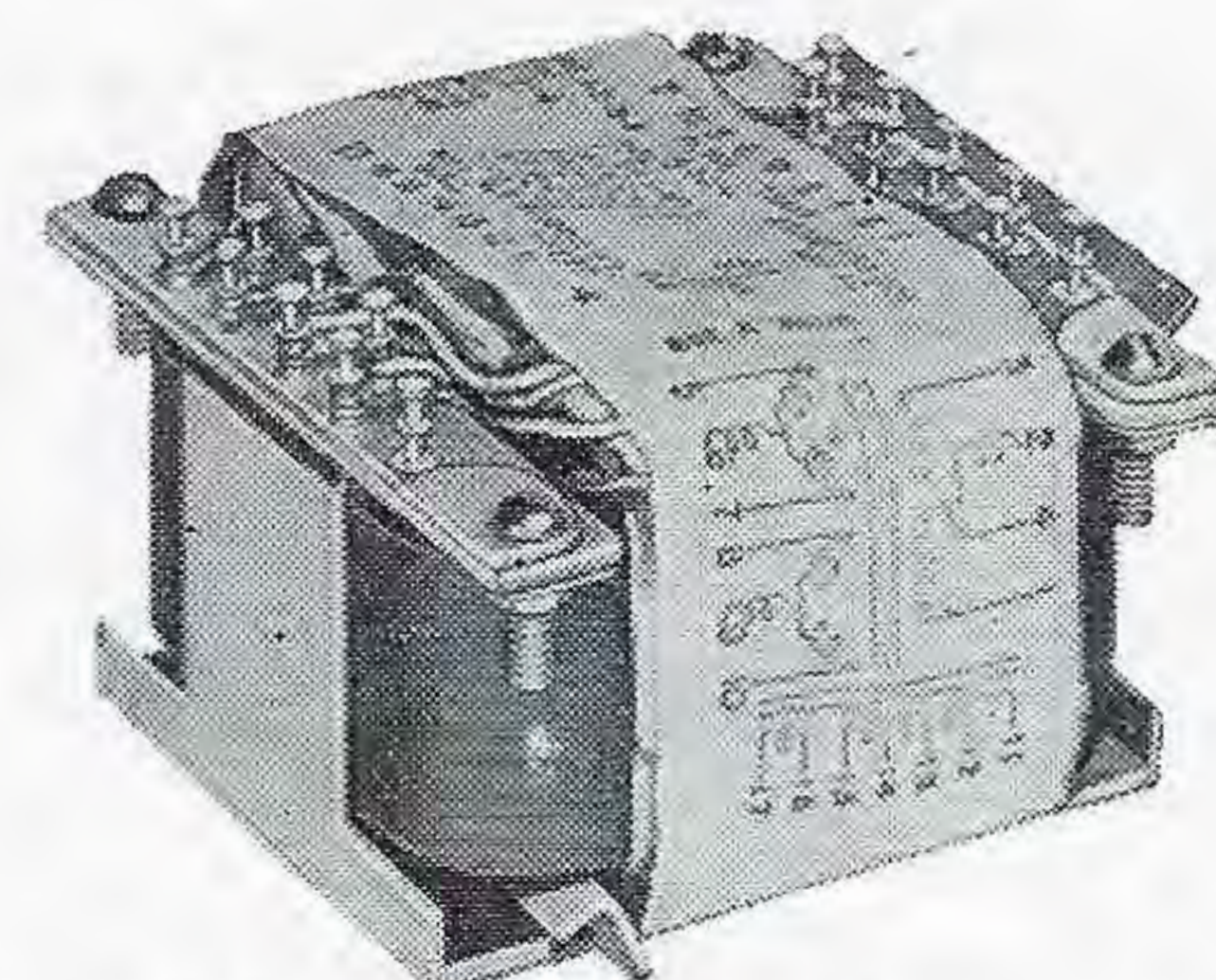
High voltage filament transformer. Primary 115V., 380/1600 cycles to 5 VCT.-10 A., 21 KV hipot. 160° C. MIL-T-27A Grade 5; $2\frac{1}{4}$ x $2\frac{1}{2}$ x $2\frac{1}{4}$ ", 10 ounce.



Mo'ded power transformer. Primary 115/230 V., 50/420 cycles to 680 VCT.-.015 A., 6.3 VCT.-1.2 A., 6.3 V.-6A Commercial use; $2\frac{1}{2}$ x 3 x $2\frac{7}{8}$ ", 1.6 lbs.



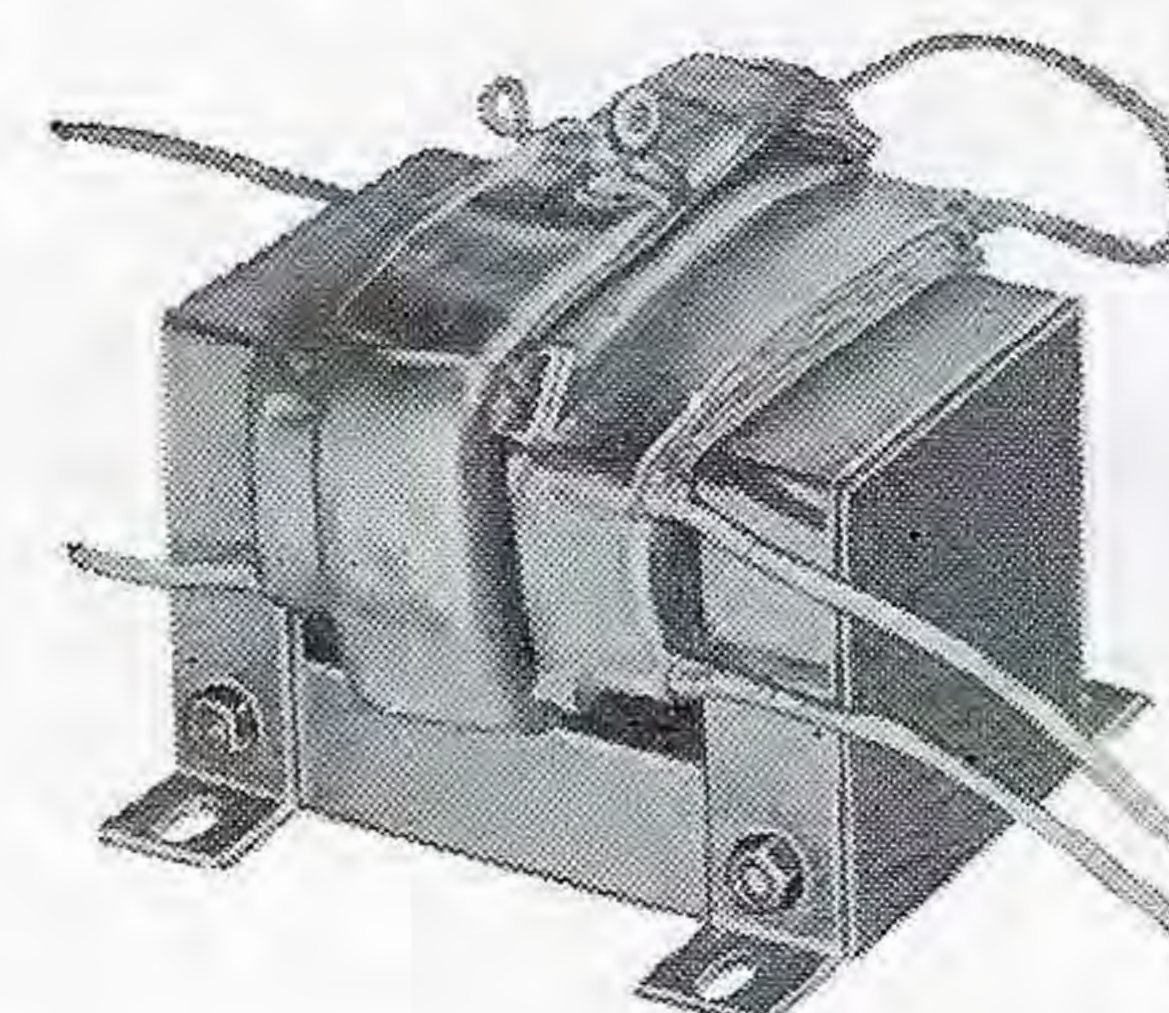
High current filament transformer. Primary 140/156 V., 47/63 cycles to 1.8 V.-1070 A. Current limiting through separate primary reactor, MIL-T-27A; 10 x 10 x $11\frac{1}{2}$ ", 150 lbs.



230° C. power transformer. Primary 115 V., 3 phase, 300/420 cycles to 200 V. and 20 V. secondaries, 525 V.A. 230° C. operating; $2\frac{3}{4}$ x 3 x 2", 1.8 lbs.



High temperature power transformer. Primary 115 V., 320/1000 cycles to four 6.3 V. and one 475 V. secondaries. 200° C. MIL-T-27A; $2\frac{1}{4}$ x 2 x 2", 9 ounce.



Low capacity power transformer. Primary 115 V., 60 cycles to 250 VCT.-.05 A. and 6 V.-12.5 A. under 25 Mmfd. Commercial use; $3\frac{3}{4}$ x 4 x $3\frac{3}{4}$ ", $4\frac{1}{2}$ lbs.



HERMETIC POWER COMPONENTS

IDEAL MILITARY UNITS

A tremendous advantage exists in using the standardized UTC hermetic power components for military equipment. These units have been fully tested to MIL-T-27A. This means that they can be used in prototypes without special test costs or delays. Similarly, they can be used in production without costs or delays for special MIL-T-27A testing. Minor deviations (elimination of terminals) do not effect the original test validity.

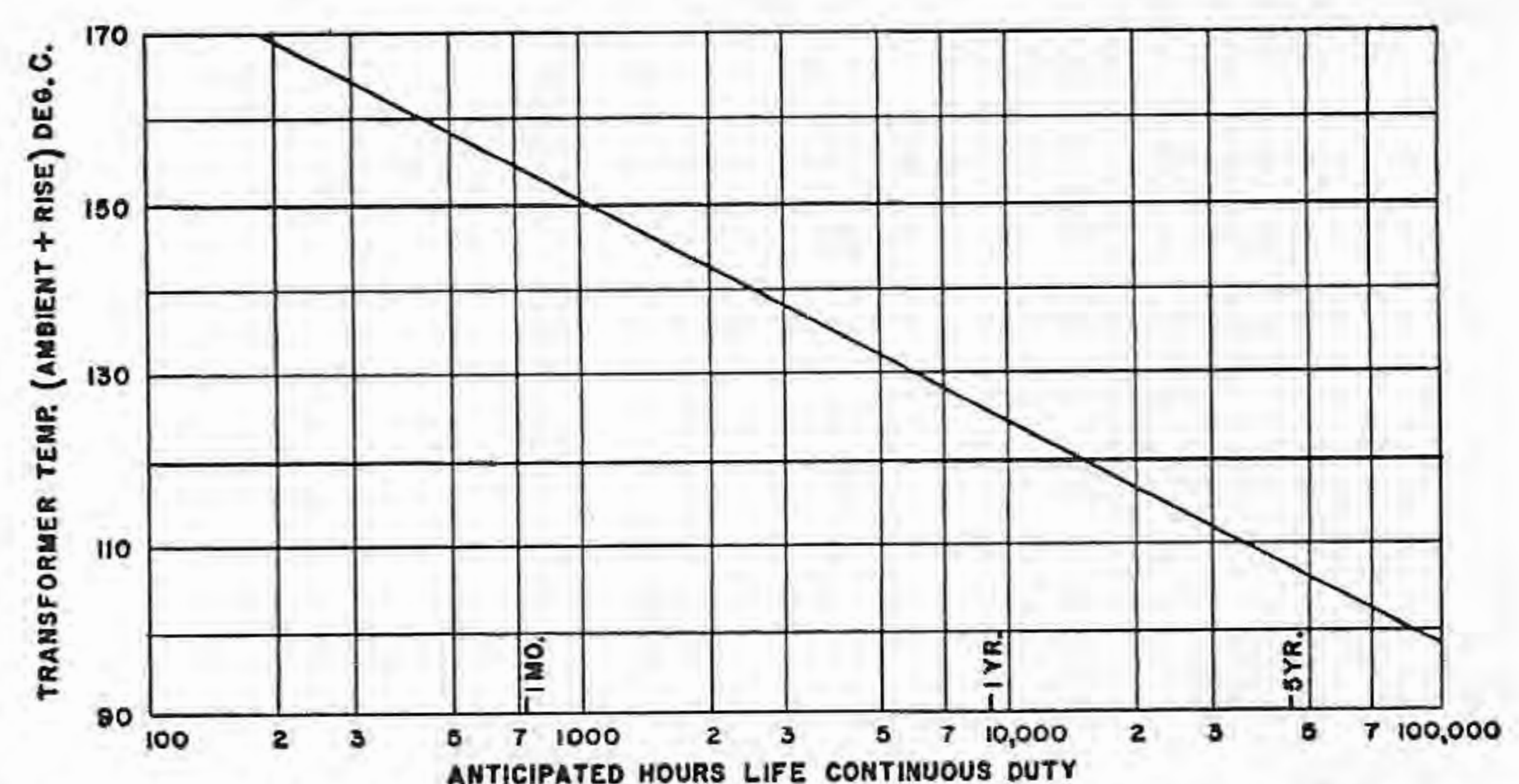
UTC hermetic power components are of rugged design with high safety factors in all characteristics. They exceed MIL-T-27A in many respects, taking into consideration the most severe conditions which may be encountered in service. Transformer regulation has been a fundamental design consideration to provide for diverse applications. Except for a few large sizes, all units are in standard drawn MIL cases with internal structure directly welded to the mounting studs.

Versatility of application has been accomplished through dual high voltage ratings on plate and power transformers, as well as multiple current ratings for filter reactors (reactors are 100% tested to exceed the inductance specified at maximum military current rating). For full understanding of the capabilities of the power transformers, the DC voltage as well as permissible currents have been listed for both choke and condenser input at both output voltages.

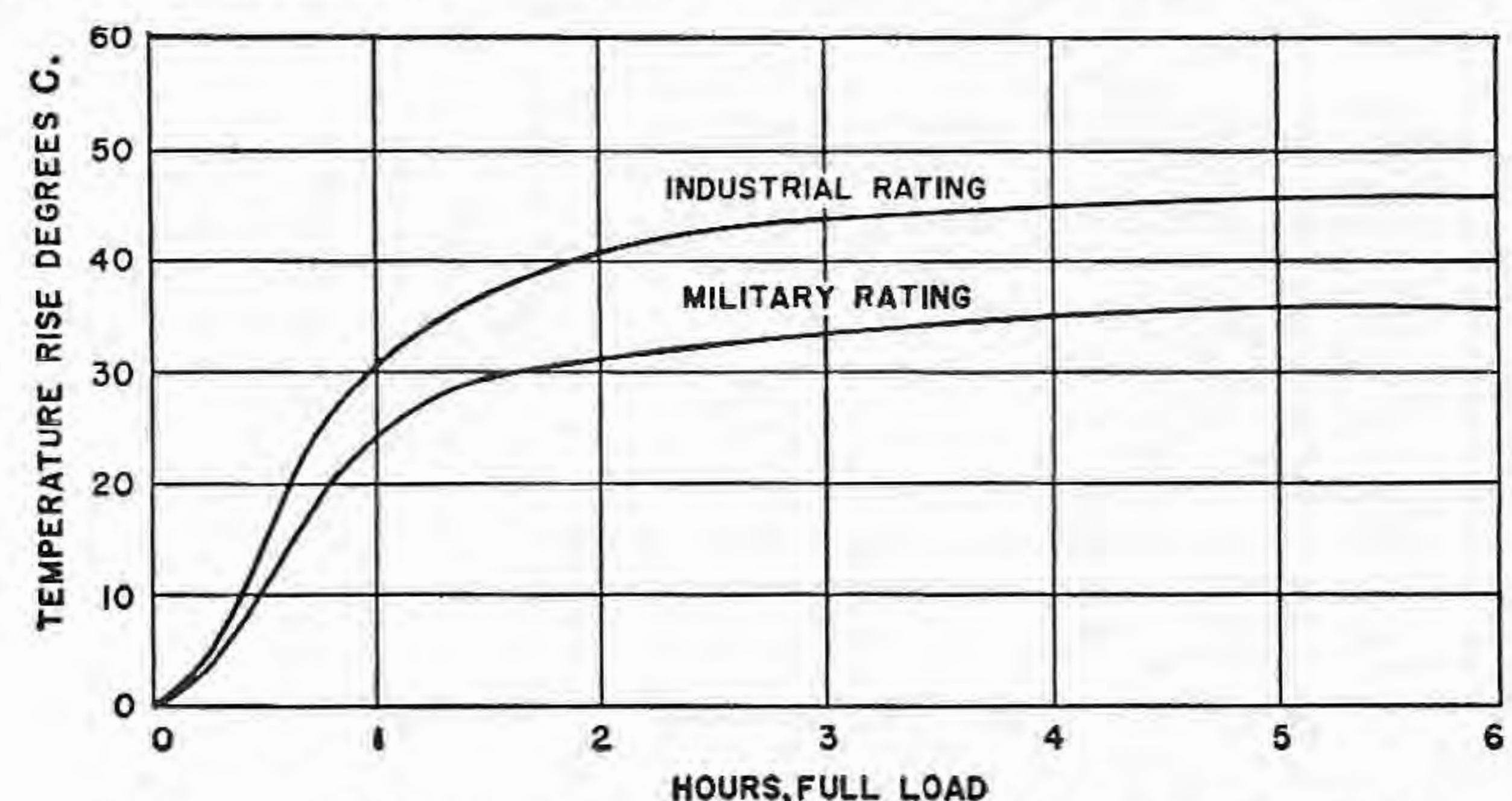
HIGHEST INDUSTRIAL RELIABILITY

UTC hermetic power components have found wide acceptance for industrial electronics equipment where the highest reliability is important. Industrial applications involve

lower ambients (55°C . maximum) as compared to military needs (65°C .). Because of this case, components are suited to higher loads in industrial applications, still providing the same exceptional reliability. To cover this factor, all hermetic power components are rated for both military and industrial service, the latter in bold type.



Class A insulation life based on continuous duty and ambient.



Measured rise on typical "H" series power component.



MILITARY STANDARD FILAMENT, POWER, PLATE TRANSFORMERS

Hermetically sealed to MIL-T-27A Specs., see back cover.

UTC MS units are not at present considered stock items but small stocks are usually available at UTC. Your jobber will provide prices on request. The -2 after MS No. indicates grade 4 (ruggedized) which is equally usable where grade 1 is called for.

Transformer primaries are 105/115/125 V. 54/66 cycles. Current ratings for high voltage secondaries are DC, choke input filter.

UTC No.	MS No.	MIL IDENTIFIC.	Secondary Ratings		MIL CASE	WT. LBS.
N5583A	90016-2	TF4RX01EB002	2.5V- 3A.	1000 W.V.	EB	1 $\frac{1}{16}$
N5584A	90017-2	TF4RX01GB003	2.5V-10A.	1000 W.V.	GB	2 $\frac{3}{8}$
N5585A	90018-2	TF4RX01FB004	5V- 3A.	1000 W.V.	FB	1 $\frac{3}{4}$
N5586A	90019-2	TF4RX01HB005	5V-10A.	1000 W.V.	HB	3 $\frac{1}{2}$
N5587A	90020-2	TF4RX01FB006	6.3V- 2A.	1000 W.V.	FB	1 $\frac{1}{2}$
N5588A	90021-2	TF4RX01GB007	6.3V- 5A.	1000 W.V.	GB	2 $\frac{3}{4}$
N5589A	90022-2	TF4RX01JB008	6.3V-10A.	1000 W.V.	JB	5
N5590A	90023-2	TF4RX01KB009	6.3V-20A.	1000 W.V.	KB	7 $\frac{1}{2}$
N5591A	90024-2	TF4RX01JB012	2.5V-10A.	6300 W.V.	JB	4 $\frac{1}{2}$
N5592A	90025-2	TF4RX01KB013	5V-10A.	6300 W.V.	KB	6 $\frac{1}{4}$
N5593A	90026-2	TF4RX03HA001	200-100-0-100-200. 70 MA 6.3/5V-2A. 6.3V-3A.		HA	3 $\frac{3}{4}$
N5594A	90027-2	TF4RX03JB002	325-0-325, 70 MA	6.3/5V-2A. 6.3V-4A.	JB	5
N5595A	90028-2	TF4RX03KB006	325-0-325, 150 MA	5V-3A. 6.3V-5A.	KB	7 $\frac{1}{2}$
N5596A	90029-2	TF4RX03LB003	400-0-400, 175 MA	5V-3A. 6.3V-8A.	LB	9 $\frac{1}{2}$
N5597A	90030-2	TF4RX03MB004	450-0-450, 250 MA	5V-3A. 6.3V-8A.	MB	13
N5598A	90031-2	TF4RX02KB001	350-0-350, 250 MA		KB	7
N5599A	90032-2	TF4RX02LB002	550-0-550, 250 MA		LB	10
N5600A	90036-2	TF4RX02NB003	800-0-800, 250 MA		NB	16 $\frac{1}{2}$



SILICON RECTIFIER TRANSFORMERS

TRANSISTOR SUPPLY . . . TELEPHONE SUPPLY . . .
BATTERY CHARGERS . . . PLATING RECTIFIERS

/ Hermetically sealed to MIL-T-27A specs., see back cover. Type TF4RX02.

UTC silicon rectifier transformers are high reliability units in drawn MIL cases. The chart below shows the secondary voltages available and the approximate DC voltages which result in typical silicon rectifier circuits (at MIL currents shown). Primary taps can modify nom. AC voltages by -6%, +6%, and +12%. Since the capacitor following the rectifier affects the DC voltage, values used (in 1000 mfd) are shown, in parenthesis (), after each current rating. Case dimensions on page 18.



PRIMARY 115 VOLTS, 50/60 CYCLES
NOMINAL SEC. VOLTS, 8.25 to 40.5

Type No.	MIL DC Range	Indust. DC Range	MIL CASE
H-94	6V-3A to 53V-1A	6V-4A to 50V-1.2A	HA
H-95	6V-7.5A to 53V-2.5A	6V-9A to 50V-3A	KA
H-96	6V-18A to 53V-6A	6V-23A to 50V-7.5A	OA

MIL-T-27A RATINGS IN REGULAR TYPE, INDUSTRIAL RATINGS IN BOLD TYPE

	FULL WAVE BRIDGE SILICON RECTIFIER								FULL WAVE C.T.		
Nom. AC Volts*	40.5	32.25	28.5	24	20.25	16.5	12	8.25	40.5 CT	24 CT	16.5 CT
Approx. DC Volts*	53	41	34	25	24	18	12	6	24	12	6.6
H-94 DC Amp.	1. (.5)	1.1(.5)	1.2(.5)	1.3(.5)	2 (1)	1.5(1)	2.5(2)	3 (2)	1.5(1)	1.8(1)	2.3(2)
H-94 DC Amp.	1.2(.5)	1.5(.5)	1.5(.5)	1.6(.5)	2.5(1)	2 (1)	3 (2)	3.8(2)	2 (1)	2.2(1)	2.8(2)
H-95 DC Amp.	2.5(1)	3 (1)	3 (1)	3.5(1)	5 (2)	3.7(2)	6 (4)	7.5(4)	3.7(2)	4.5(2)	5.5(4)
H-95 DC Amp.	3 (1)	3.5(1)	3.8(1)	4 (1)	6 (2)	4.5(2)	7.5(4)	9 (4)	4.5(2)	5.5(2)	6.7(4)
H-96 DC Amp.	6 (4)	7 (4)	7.5(4)	8 (4)	12 (6)	9 (6)	15 (12)	18 (12)	9 (6)	11 (6)	13.5(12)
H-96 DC Amp.	7.5(4)	8.5(4)	9.5(4)	10 (4)	15 (6)	11 (6)	19 (12)	23 (12)	11 (6)	13.5(6)	17 (12)

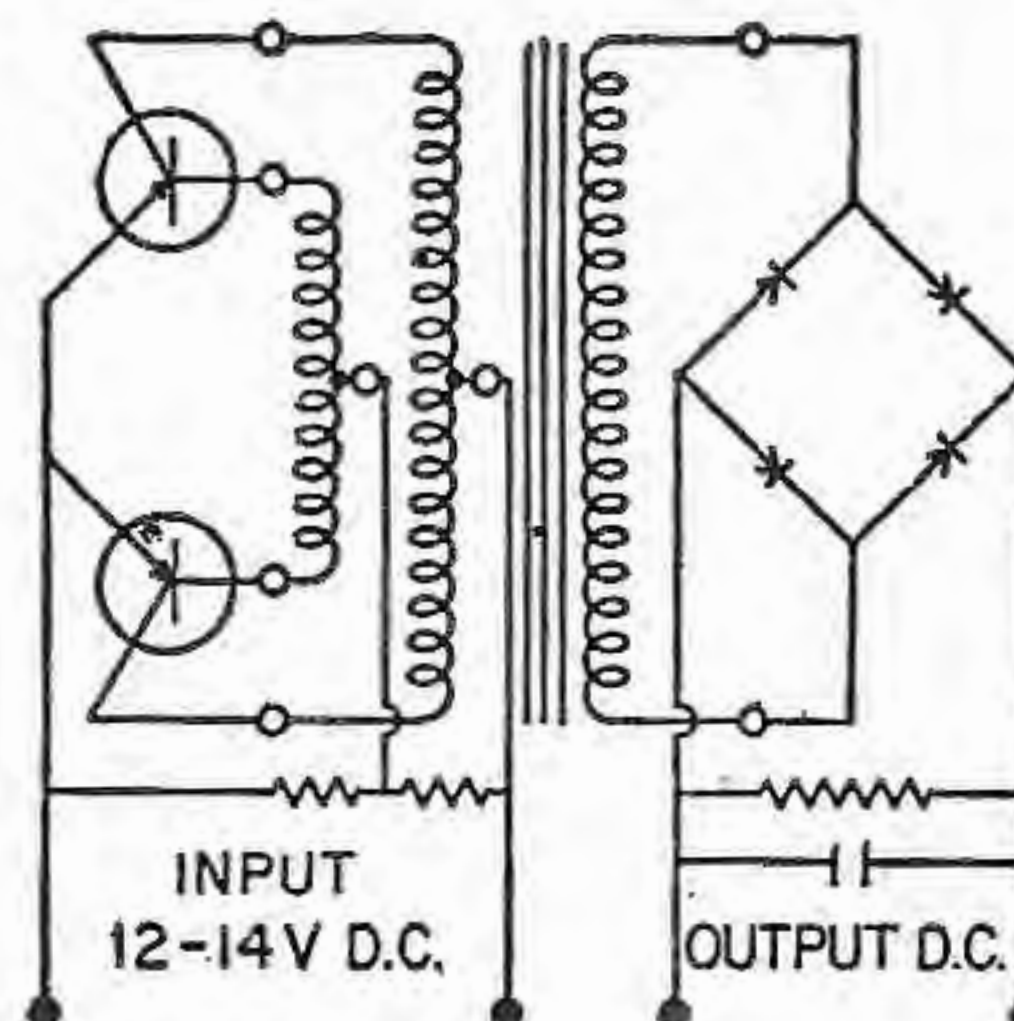
*Nom. AC and DC volts are at 115 volt input . . . primary taps can modify -6%, +6%, and +12%.



TRANSISTOR INVERTER TRANSFORMERS

Hermetically sealed to MIL-T-27A specs., see back cover. Type TF4SX40.

High switching current transistors have made it possible to eliminate vibrators for plate supplies operating from batteries. UTC inverter transformers for this application are high reliability (layer insulated) types providing high efficiency in small size. Units are in drawn MIL cases. Circuit details supplied with transformer. With 6 V. input instead of 12 V., output voltage is halved, current rating remains the same. Dimensions on page 18.



FOR 12/14 OR 24/28 VOLT BATTERY

Type No.	DC output, when used in circuit shown	MIL Case
H-97	250V.- 60MA	AH
H-98	375V.-100MA	AJ
H-99	425V.-175MA	FA
H-100	550V.-200MA	GB



400 CYCLE FILAMENT TRANSFORMERS

UTC molded 400 cycle filament transformers and reactors are designed to provide maximum reliability with small size and weight. They are suited to ground or airborne applications.



PRIMARY 105/115 VOLTS 380-1000 CYCLES. TYPE TF5SX01ZZ.

Type No.	Sec. Volts	Sec. Amp.	Test Volts RMS	L In.	W In.	H In.	Mtg. In.	Wt. Lbs.
H-101	6.3 CT	3.5	2500	1 ⁵ / ₃₂	1 ¹ / ₃₂	2	1 ¹ / ₈ x 1 ⁵ / ₃₂	.3
H-102	6.3 CT	5.5	2500	1 ³ / ₄	2	2 ¹ / ₄	1 ¹ / ₈ x 1 ³ / ₃₂	.44
H-103	6.3 CT	10	2500	2 ⁵ / ₁₆	2 ¹ / ₈	2 ¹ / ₂	1 ¹ / ₈ x 1 ¹ / ₃₂	.8
H-104	6.3 CT	25	2500	2 ⁷ / ₈	2 ¹ / ₂	3 ¹ / ₃₂	2 ³ / ₁₆ x 1 ¹ / ₃₂	1.5

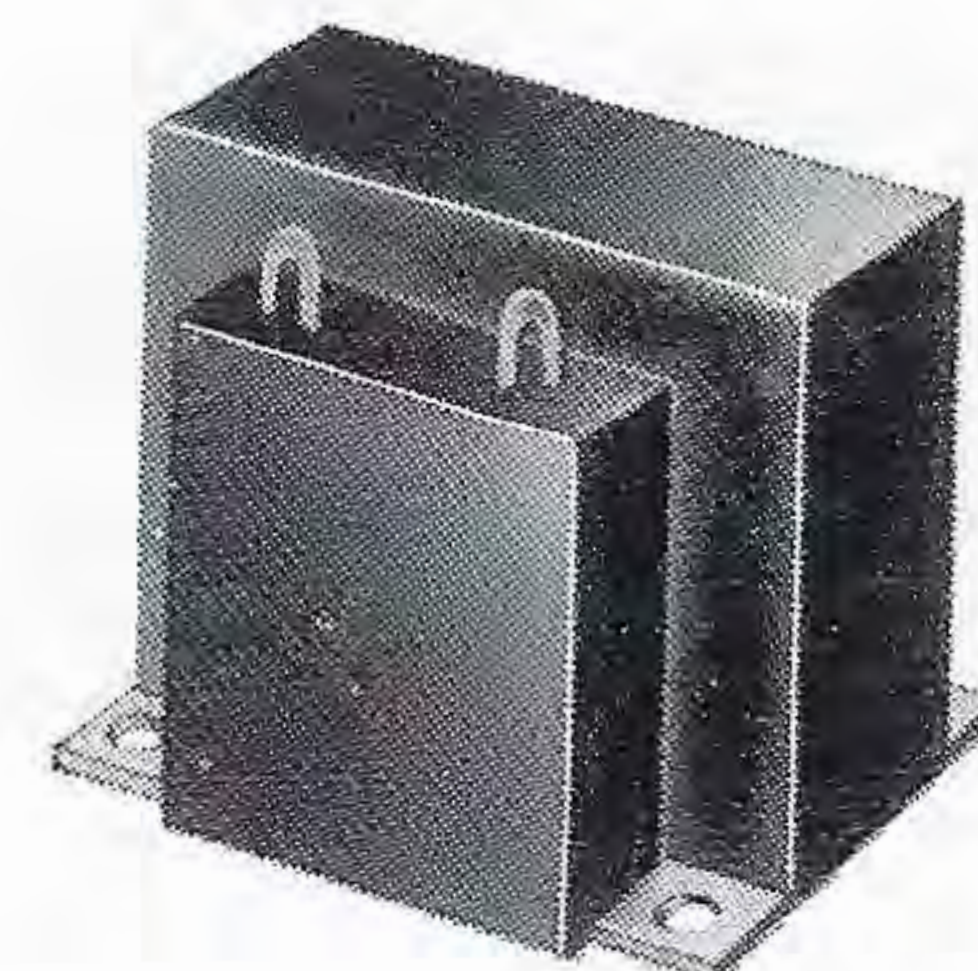


MOLDED FILTER REACTORS

Hermetically sealed to MIL-T-27A specs., see back cover. Type TF5SX04ZZ.

Type No.	*Inductance Henries @ DC MA.	DCR, Ohms	Test Volts	L	W	H	Wgt. Lbs.
H-105	2.5 @ 25 MA, 2 @ 35 MA, 1.5 @ 45 MA.	225	1000	1 ³ / ₁₆	1 ¹ / ₁₆	1 ¹ / ₁₆	.1
H-106	2.25 @ 60 MA, 1.75 @ 80 MA, 1.25 @ 100 MA.	110	1000	1 ¹ / ₈	1 ¹ / ₄	1 ³ / ₈	.28
H-107	2 @ 120 MA, 1.5 @ 160 MA, 1 @ 200 MA.	55	2500	2 ³ / ₁₆	1 ³ / ₄	1 ³ / ₁₆	.9
H-108	2 @ 220 MA, 1.5 @ 270 MA, 1 @ 325 MA.	35	2500	2 ¹ / ₁₆	2 ¹ / ₄	2 ³ / ₁₆	2
H-109	Series: 40 Mhy @ 1.25A, 30 Mhy @ 1.75A, 20 Mhy @ 2.5A. Parallel: 10 Mhy @ 2.5A, 7.5 Mhy @ 3.5A, 5 Mhy @ 5A.	.6 .15	750	2 ¹ / ₁₆	2 ¹ / ₄	2 ³ / ₁₆	2

*Inductance test is performed at maximum current rating.





HERMETIC POWER COMPONENT DIMENSIONS

MIL CASES, INCHES

Mil Case	A	B	C	D	E	Mtg. Studs	Wt. Lbs.
AH	1 $\frac{5}{16}$	1 $\frac{5}{16}$	1 $\frac{3}{4}$	Diagonal	1 $\frac{1}{4}$	6-32x $\frac{3}{8}$	$\frac{3}{8}$
AJ	1 $\frac{5}{8}$	1 $\frac{5}{8}$	2 $\frac{3}{8}$	1 $\frac{1}{16}$	1 $\frac{3}{16}$	6-32x $\frac{3}{8}$	$\frac{2}{3}$
FA	2 $\frac{5}{16}$	2 $\frac{1}{16}$	3 $\frac{1}{8}$	1 $\frac{11}{16}$	1 $\frac{1}{16}$	6-32x $\frac{3}{8}$	1 $\frac{1}{2}$
FB	2 $\frac{5}{16}$	2 $\frac{1}{16}$	2 $\frac{1}{2}$	1 $\frac{11}{16}$	1 $\frac{1}{16}$	6-32x $\frac{3}{8}$	1 $\frac{1}{2}$
GB	2 $\frac{3}{4}$	2 $\frac{3}{8}$	2 $\frac{13}{16}$	2 $\frac{1}{8}$	1 $\frac{3}{4}$	6-32x $\frac{3}{8}$	2 $\frac{1}{2}$
HA	3 $\frac{1}{16}$	2 $\frac{5}{8}$	4 $\frac{1}{4}$	2 $\frac{1}{64}$	1 $\frac{55}{64}$	8-32x $\frac{3}{8}$	4 $\frac{1}{2}$
HB	3 $\frac{1}{16}$	2 $\frac{5}{8}$	3 $\frac{3}{16}$	2 $\frac{1}{64}$	1 $\frac{55}{64}$	8-32x $\frac{3}{8}$	3 $\frac{1}{2}$
JA	3 $\frac{1}{16}$	3 $\frac{1}{16}$	4 $\frac{7}{8}$	2 $\frac{5}{8}$	2 $\frac{1}{8}$	8-32x $\frac{3}{8}$	6
JB	3 $\frac{1}{16}$	3 $\frac{1}{16}$	3 $\frac{7}{8}$	2 $\frac{5}{8}$	2 $\frac{1}{8}$	8-32x $\frac{3}{8}$	5
KA	3 $\frac{15}{16}$	3 $\frac{3}{8}$	5 $\frac{1}{4}$	3	2 $\frac{1}{16}$	10-32x $\frac{1}{2}$	8 $\frac{1}{2}$
KB	3 $\frac{15}{16}$	3 $\frac{3}{8}$	4 $\frac{1}{16}$	3	2 $\frac{1}{16}$	10-32x $\frac{1}{2}$	7
LA	4 $\frac{5}{16}$	3 $\frac{11}{16}$	5 $\frac{5}{16}$	3 $\frac{5}{16}$	2 $\frac{11}{16}$	10-32x $\frac{1}{2}$	11
LB	4 $\frac{5}{16}$	3 $\frac{11}{16}$	4 $\frac{1}{2}$	3 $\frac{5}{16}$	2 $\frac{11}{16}$	10-32x $\frac{1}{2}$	11
MB	4 $\frac{11}{16}$	4	4 $\frac{13}{16}$	3 $\frac{11}{16}$	3	$\frac{1}{4}$ -20x $\frac{5}{8}$	14
NA	5 $\frac{1}{16}$	4 $\frac{5}{16}$	6 $\frac{13}{16}$	4 $\frac{1}{16}$	3 $\frac{5}{16}$	$\frac{1}{4}$ -20x $\frac{5}{8}$	18
NB	5 $\frac{1}{16}$	4 $\frac{5}{16}$	5 $\frac{1}{2}$	4 $\frac{1}{16}$	3 $\frac{5}{16}$	$\frac{1}{4}$ -20x $\frac{5}{8}$	15
OA	5 $\frac{1}{2}$	4 $\frac{1}{2}$	6 $\frac{3}{4}$	3 $\frac{3}{4}$	3	$\frac{1}{4}$ -20x $\frac{5}{8}$	21

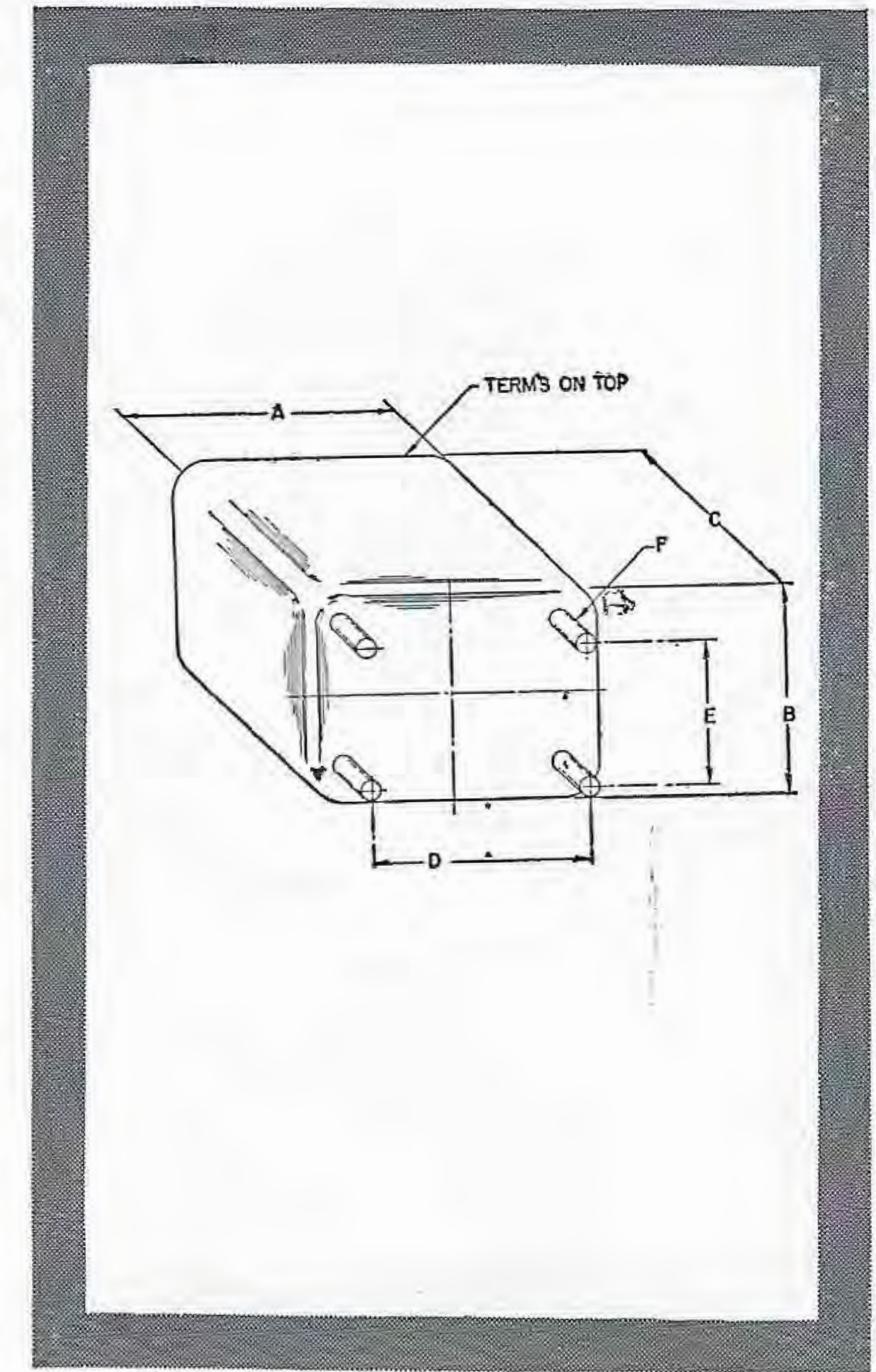
UTC CASES, INCHES

Type No.	A	B	C	D	E	Mtg. Studs	Wt. Lbs.
H-79	7	7	8	5 $\frac{7}{8}$	5 $\frac{7}{8}$	$\frac{3}{8}$ -16(6)	60
H-113	6	5 $\frac{1}{8}$	6 $\frac{3}{4}$	5	4 $\frac{3}{16}$	$\frac{1}{4}$ -20	27
H-114	6 $\frac{3}{4}$	6 $\frac{1}{2}$	8	5 $\frac{5}{8}$	5 $\frac{3}{8}$	$\frac{3}{8}$ -16	50
H-115	6 $\frac{3}{4}$	6 $\frac{1}{2}$	8	5 $\frac{5}{8}$	5 $\frac{3}{8}$	$\frac{3}{8}$ -16	50
H-116	9 $\frac{3}{4}$	8 $\frac{1}{2}$	10 $\frac{1}{4}$	7 $\frac{3}{4}$	7 $\frac{1}{4}$	$\frac{3}{8}$ -16(6)	95
H-117	11	11	14 $\frac{3}{4}$	8 $\frac{3}{8}$	8 $\frac{3}{8}$	$\frac{5}{8}$ -11	160
H-128	6 $\frac{1}{2}$	5 $\frac{1}{2}$	7 $\frac{3}{4}$	5 $\frac{3}{8}$	4 $\frac{3}{8}$	$\frac{3}{8}$ -16	34
H-129	6 $\frac{1}{2}$	5 $\frac{1}{2}$	7 $\frac{3}{4}$	5 $\frac{3}{8}$	4 $\frac{3}{8}$	$\frac{3}{8}$ -16	28

CUTOUT DIMENSIONS, INCHES

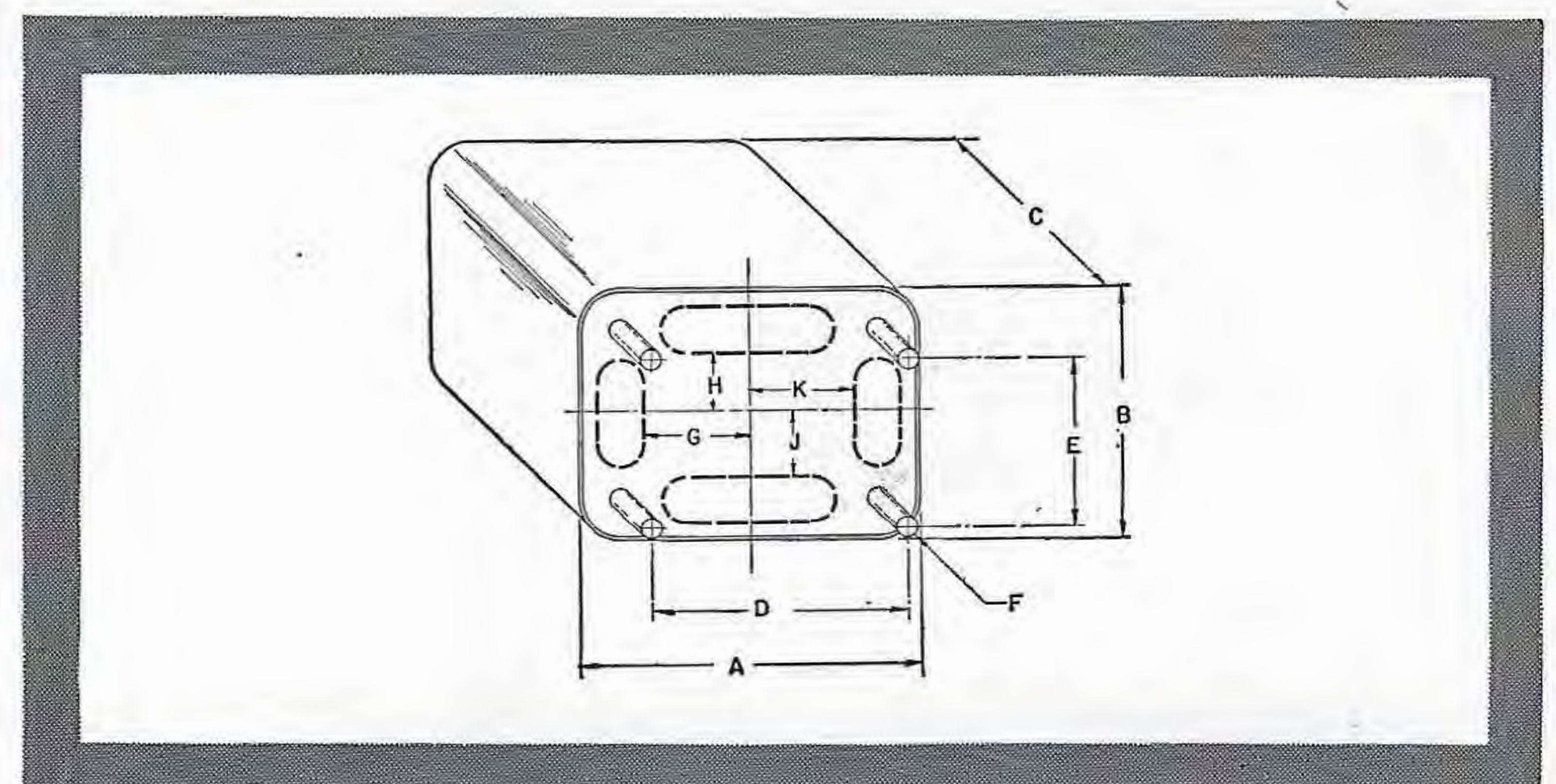
UTC No.	Case (Dim. above)	Cutout Location	Cutout Dim.	Cutout Location	Cutout Dim.
H-70	AH	H= $\frac{3}{16}$	$\frac{3}{8}$ x $\frac{5}{8}$		
H-71	FB	H= $\frac{15}{32}$	$\frac{1}{2}$ x1 $\frac{1}{4}$		
H-72	OB	H= $\frac{17}{32}$	$\frac{1}{2}$ x $\frac{7}{8}$		
H-73	HB	H= $\frac{5}{8}$	$\frac{5}{8}$ x1 $\frac{1}{8}$		
H-74	JB	H= $\frac{3}{4}$	$\frac{5}{8}$ x1 $\frac{1}{8}$		
H-75	KB	G= $\frac{13}{16}$	$\frac{5}{8}$ x1 $\frac{3}{16}$		
H-76	LB	G= $\frac{15}{32}$	1 $\frac{1}{16}$ x1 $\frac{5}{16}$		
H-77	MB	G=1 $\frac{1}{2}$	1 $\frac{1}{16}$ x1 $\frac{1}{4}$		
H-78	OA	H=1	1x2		
H-79	OA	Top term			
H-80	FA	Centered	1 $\frac{1}{2}$ Dia		
H-81	HA	Centered	2 $\frac{1}{2}$ Dia		
H-82	JB	Centered	2 $\frac{1}{4}$ Dia		
H-83	JA	Centered	2 $\frac{5}{8}$ Dia		
*H-84	KA	Centered	2 $\frac{1}{16}$ Sq		
*H-85	LA	Centered	2 $\frac{1}{16}$ Sq		
H-86	MB	G= $\frac{29}{32}$	1 $\frac{1}{4}$ x2 $\frac{5}{8}$	K= $\frac{29}{32}$	1 $\frac{1}{4}$ x2 $\frac{5}{8}$
H-87	NB	Centered	2 $\frac{7}{8}$ Dia		
H-88	NA	Centered	2 $\frac{7}{8}$ Dia		
H-89	OA	H= $\frac{7}{8}$	1 $\frac{1}{4}$ x2 $\frac{1}{2}$	J= $\frac{7}{8}$	1 $\frac{1}{4}$ x2 $\frac{1}{2}$
H-90	JA	Centered	2 $\frac{5}{8}$ Dia		
*H-91	KA	Centered	2 $\frac{1}{16}$ Sq		
H-92	MB	G= $\frac{29}{32}$	1 $\frac{1}{4}$ x2 $\frac{5}{8}$	K= $\frac{29}{32}$	1 $\frac{1}{4}$ x2 $\frac{5}{8}$
H-93	OA	H= $\frac{7}{8}$	1 $\frac{1}{4}$ x2 $\frac{1}{2}$	J= $\frac{7}{8}$	1 $\frac{1}{4}$ x2 $\frac{1}{2}$
*H-94	HA	Centered	2x2 $\frac{3}{8}$ Sq		
H-95	KA	H= $\frac{3}{4}$	$\frac{3}{4}$ x2 $\frac{1}{8}$	*J= $\frac{7}{16}$	1 $\frac{1}{16}$ x2 $\frac{3}{4}$
H-96	OA	H= $\frac{7}{8}$	$\frac{7}{8}$ x2 $\frac{5}{8}$	J= $\frac{5}{8}$	1 $\frac{1}{2}$ x3 $\frac{1}{4}$
H-97	AH				
*H-98	AJ	Centered	1 $\frac{3}{16}$ x1 $\frac{1}{16}$		
*H-99	FA	Centered	1 $\frac{1}{16}$ Sq		
H-100	GB	Centered	1 $\frac{5}{8}$ Sq		
H-110	MB	G=1 $\frac{3}{8}$	1 $\frac{3}{16}$ x2 $\frac{3}{8}$	K=1 $\frac{3}{8}$	1 $\frac{3}{16}$ x2 $\frac{3}{8}$
H-111	NA	H=1 $\frac{5}{16}$	$\frac{7}{8}$ x3 $\frac{1}{4}$	J=1 $\frac{5}{16}$	$\frac{5}{8}$ x3
H-112	NA	H=1 $\frac{5}{16}$	$\frac{7}{8}$ x3 $\frac{1}{4}$	J=1 $\frac{5}{16}$	$\frac{5}{8}$ x3
H-113		G=1 $\frac{13}{16}$	$\frac{3}{4}$ x2 $\frac{7}{8}$	K=1 $\frac{13}{16}$	1 $\frac{1}{16}$ x3 $\frac{1}{2}$
H-114		Top term			
H-115		Top term			
H-116		Top term			
H-117		Top term			
H-120	GB	H= $\frac{5}{16}$	$\frac{3}{4}$ x1 $\frac{1}{8}$	J= $\frac{7}{16}$	$\frac{5}{8}$ x1 $\frac{7}{8}$

*Denotes $\frac{1}{8}$ radius



UTC No.	Case (Dim. above)	Cutout Location	Cutout Dim.	Cutout Location	Cutout Dim.
H-121	JB	G= $\frac{5}{8}$	$\frac{5}{8}$ x2	K= $\frac{1}{8}$	1 $\frac{3}{8}$ x2 $\frac{1}{8}$
H-122	KB	G=1	$\frac{5}{8}$ x2	K= $\frac{3}{16}$	1 $\frac{3}{8}$ x2 $\frac{1}{8}$
*H-123	NB	Centered	3 $\frac{1}{4}$ x4 $\frac{3}{8}$		
H-124	FB	H= $\frac{3}{4}$	$\frac{1}{16}$ x1 $\frac{1}{4}$	J= $\frac{7}{16}$	$\frac{1}{2}$ x1 $\frac{3}{8}$
H-125	KB	G=1	$\frac{5}{8}$ x2	K= $\frac{3}{16}$	1 $\frac{3}{8}$ x2 $\frac{1}{8}$
H-126	LA	H= $\frac{7}{8}$	1 $\frac{1}{16}$ x2 $\frac{5}{8}$	J= $\frac{3}{8}$	1 $\frac{5}{16}$ x2 $\frac{3}{8}$
H-127	NA	Top term			
H-128		Top term			
H-129		Top term			
H-130	AJ	Centered	1 $\frac{1}{4}$ Dia		
H-131	FB	H= $\frac{3}{8}$	$\frac{1}{16}$ x1 $\frac{1}{4}$	J= $\frac{3}{8}$	$\frac{5}{16}$ x1 $\frac{1}{4}$
*H-132	JA	Centered	2 $\frac{3}{8}$ x2 $\frac{1}{8}$		
H-133	HB	H= $\frac{5}{8}$	$\frac{5}{8}$ x1 $\frac{5}{8}$	J= $\frac{5}{8}$	$\frac{5}{8}$ x2
H-134	HA	H= $\frac{3}{8}$	$\frac{3}{4}$ x1 $\frac{5}{8}$	J= $\frac{3}{8}$	$\frac{5}{8}$ x2
H-135	JB	G=1 $\frac{5}{16}$	$\frac{3}{4}$ x1 $\frac{3}{4}$	K=1 $\frac{5}{16}$	$\frac{3}{4}$ x1 $\frac{3}{4}$
H-136	LA	Centered	2 $\frac{7}{8}$ Dia		
H-194	HA				
H-195	JA				
H-196	KA				
H-197	MB	G=1 $\frac{17}{32}$	1 $\frac{1}{4}$ x2 $\frac{5}{8}$	K=1 $\frac{17}{32}$	1 $\frac{1}{4}$ x2 $\frac{5}{8}$

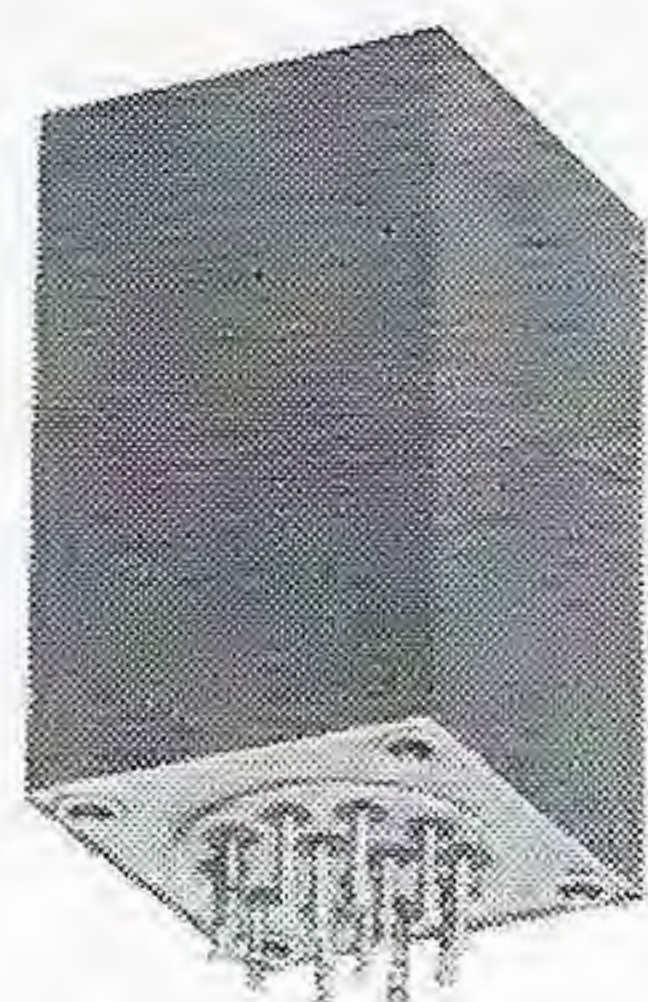
*Denotes $\frac{1}{8}$ radius



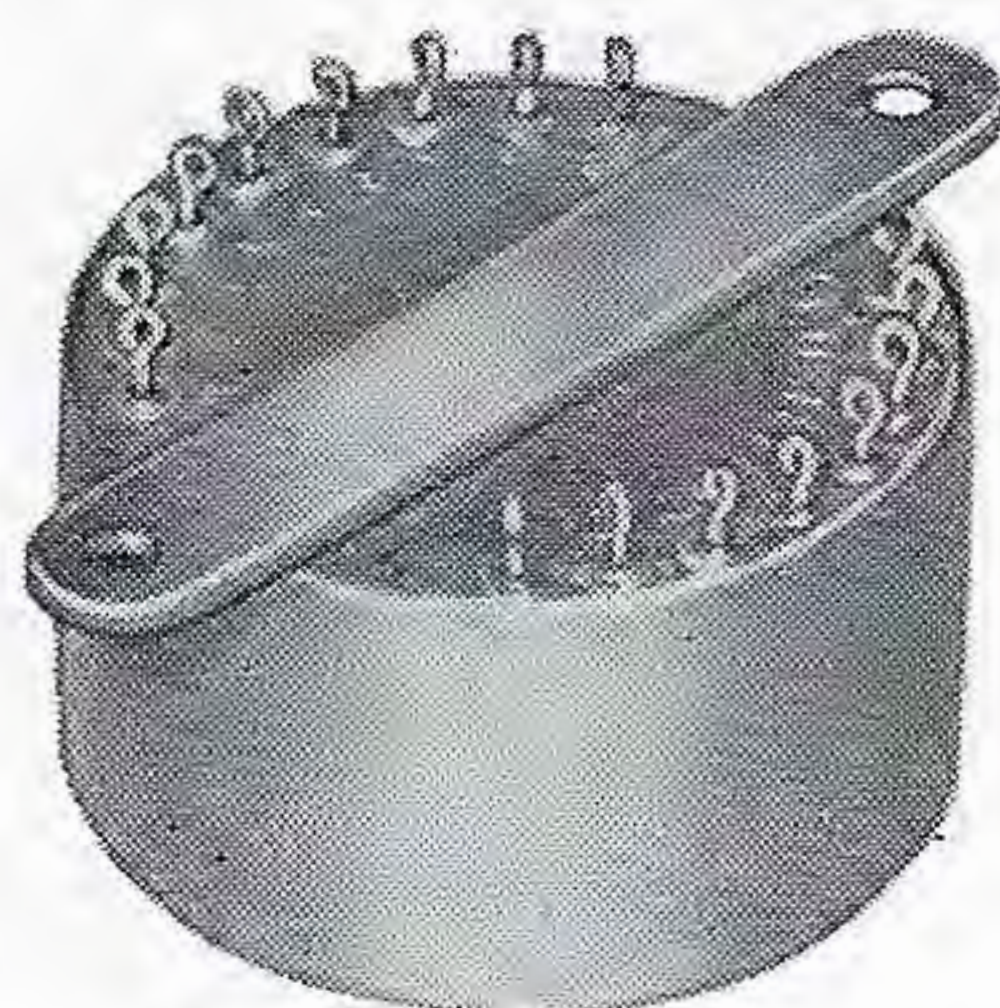


MAGAMPS, SATURABLE REACTORS, REFERENCE UNITS . . . TO SPECS.

In addition to the many needs met by UTC stock components, there are a variety of unique applications which require special units. The illustrations below are intended to show some of the thousands of special units produced by UTC and to provide the equipment engineer with a concept of the possibilities in present special component design.



Two self saturating magamps in one case. Output 250 V. into 750 ohms. Power gain 135,000. MIL-T-27A; 2 x 2 x 2½, 12 oz.



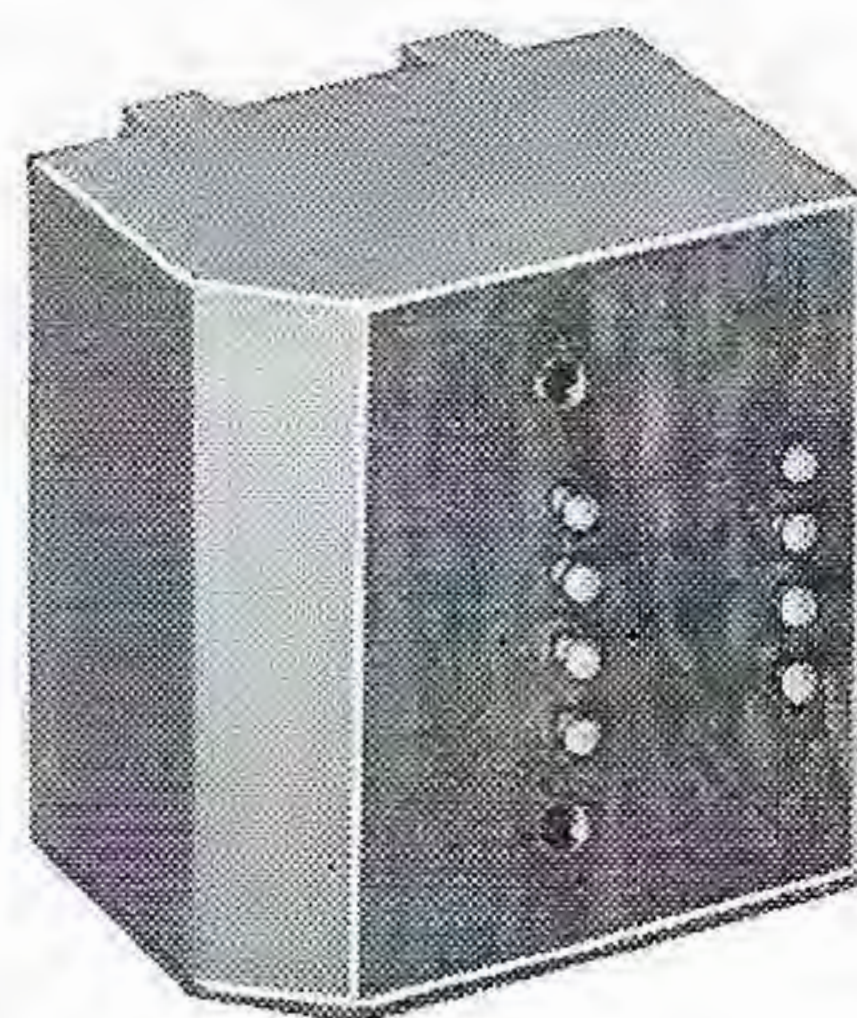
Multi Control Magamp. Power gain 400,000. Control Current. .00003A. Output 25 V. DC into 1K. Six power windings, bias, feedback, and two control windings. MIL-T-27A; 2¼ dia. x 1¼ high, 8 oz.



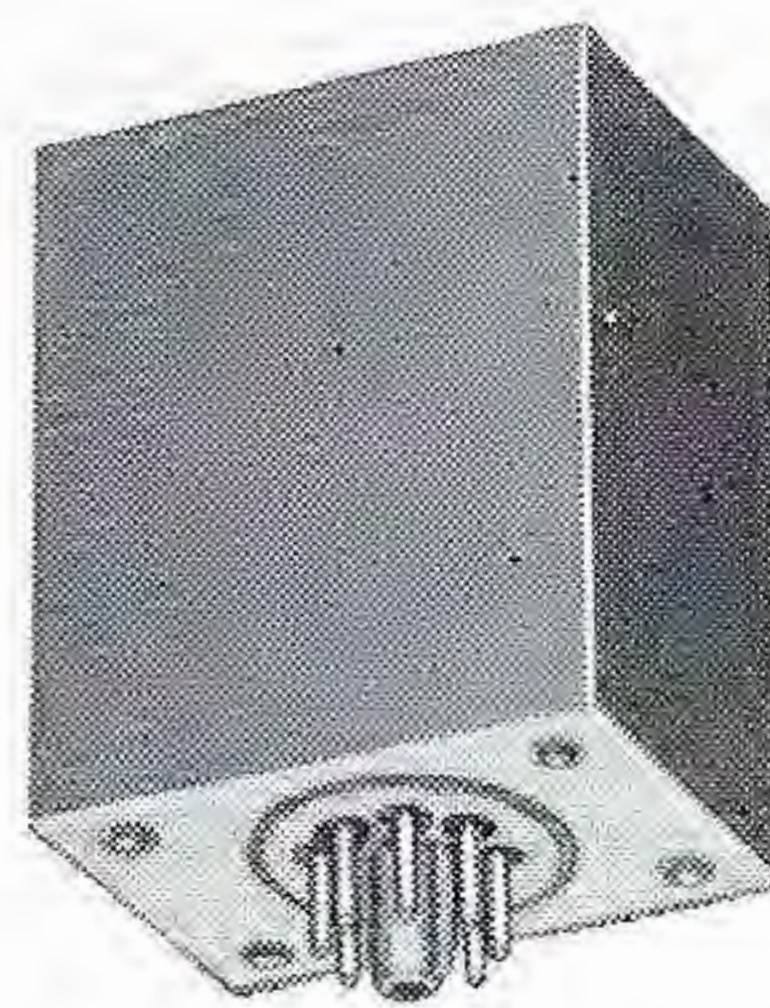
Magamp for 50 watt, 60 cycle servomotor. Two control windings. One feedback winding, one power winding, diode panel. Power gain 100. MIL-T-27A; 30 lbs.



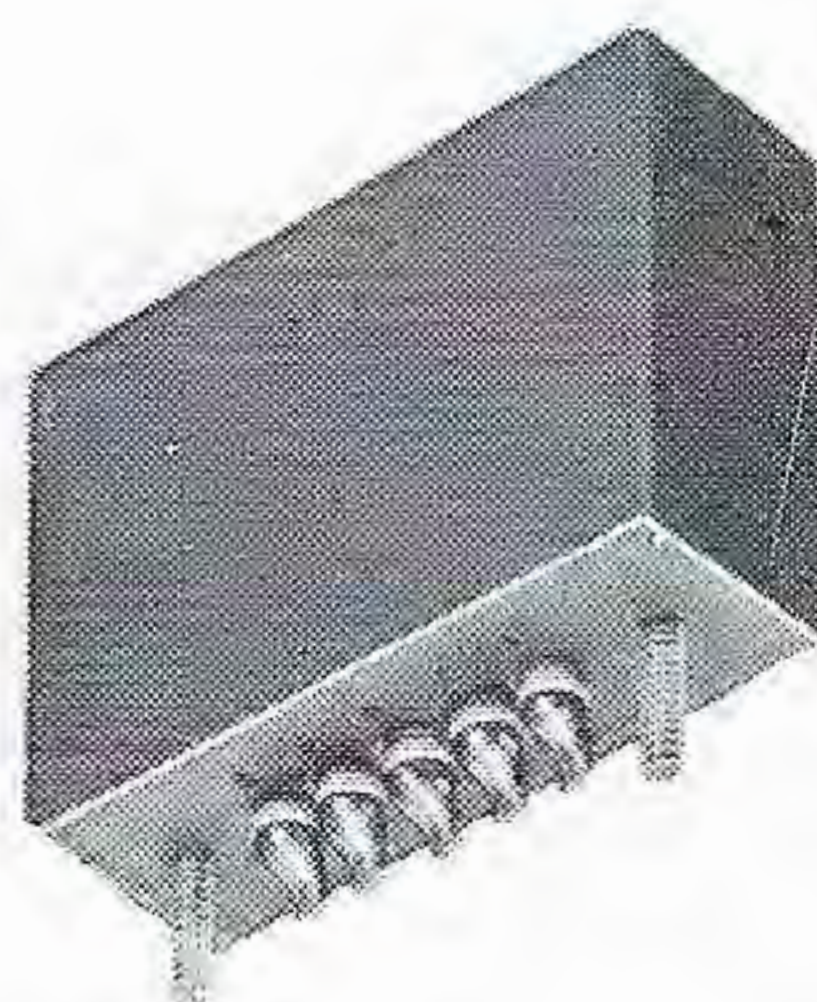
Magamp delivering 32 watts for two 400 cycle servomotors. 7 MA DC control current. MIL-T-27A Grade 5, Class T, Life Y; 2 x 4½ x 3½, 3 lbs.



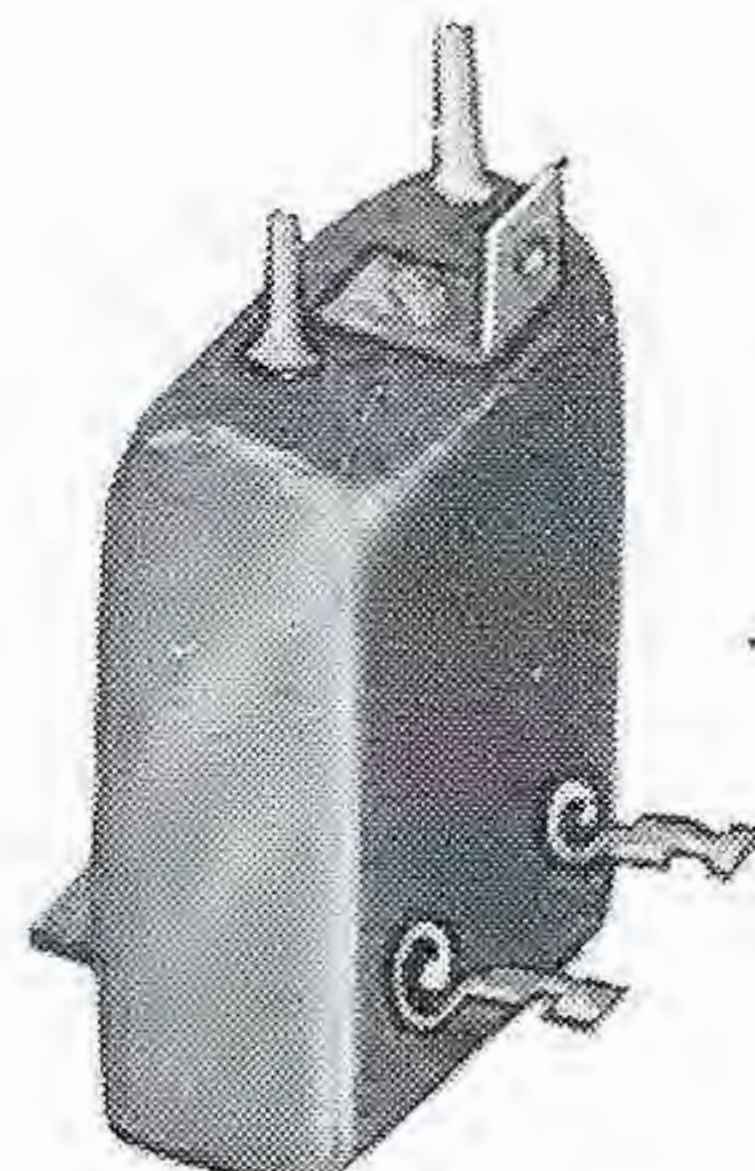
Dual saturable reactor. Input 10 V. - 1 KC. Output 3.5 V. 2 MA DC control current. 130° C. MIL-T-27A; 1¾ x 1¾ x 1¼, 5 oz.



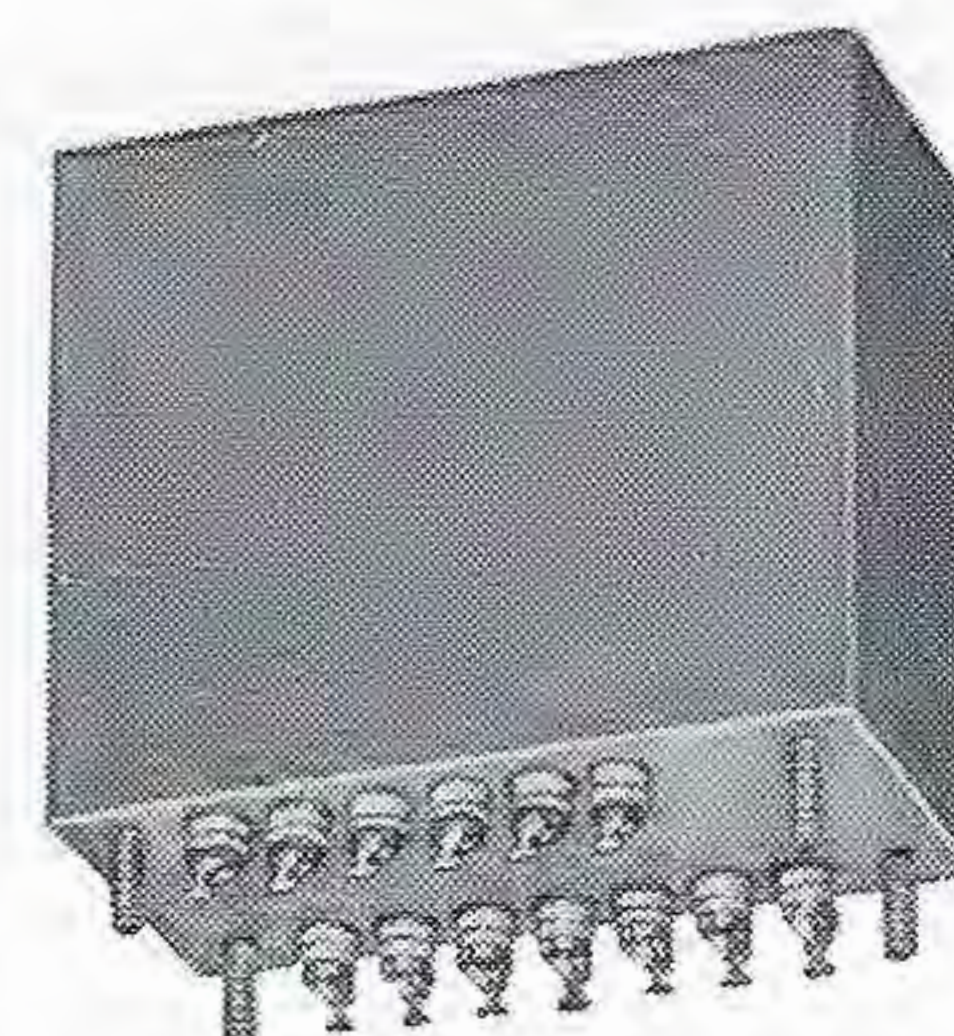
Magamp for 11 watt, 115 V., 400 cycle servomotor. Standard octal plug. MIL-T-27A; 1¾ x 2½ x 3, 1.7 lb.



Saturable reactor. Input 50 V.-60 cycles. Output 10 V., 4 MA DC control current. MIL-T-27A; 7⁄8 x 2½ x 1½, 6 oz.



RF saturable inductor. 2 MA DC for sweep from 17 MC to 21 MC. MIL-T-27A; 2 oz.



Servo reference transformer. Input 120 V., 380 to 420 cycles. Output ratios under load held to .005% tolerance. Phase shift .05° max. MIL-T-27A; 2¼ x 1¾ x 2, 12 oz.



Three phase to two phase reference transformer, 400 cycle. Accuracy .25% over load range and -65° C. to +105° C. 1½ x 1½ x 5⁄8, 2 oz.



Precision reference transformer. Input 14 V., 400 cycles. Twelve secondaries held to low phase shift and .1% tolerance. MIL-T-27A; 1¾ x 2 x 1¾, 4.5 oz.



Instrument reference transformer. Input 50 V. 400 cycles. Three 5 V.-.025A. Outputs to .05% accuracy. Saturation characteristics and DCR balance to 3%. MIL-T-27A; 1½ x 1¾ x ¾, 2 oz.



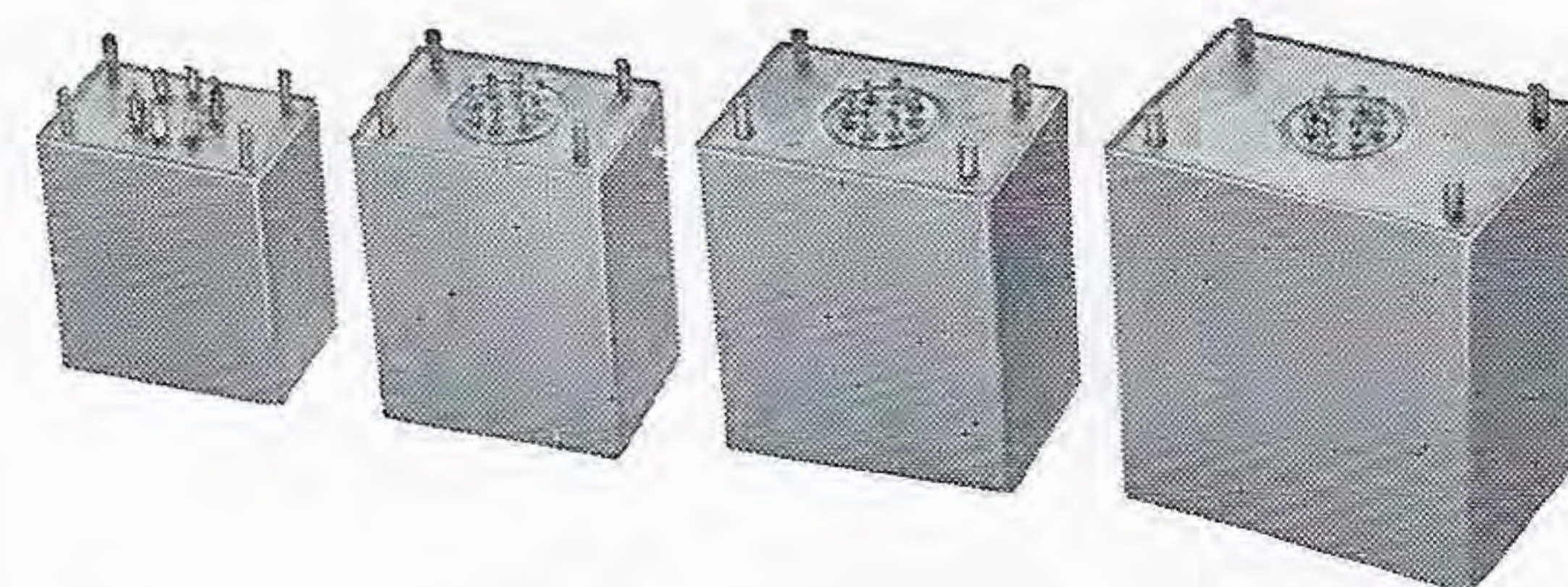
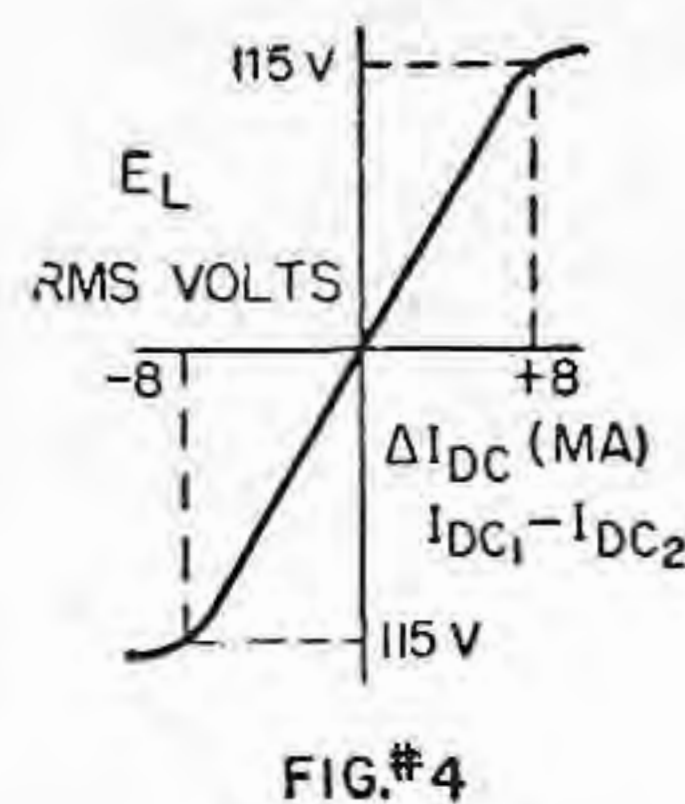
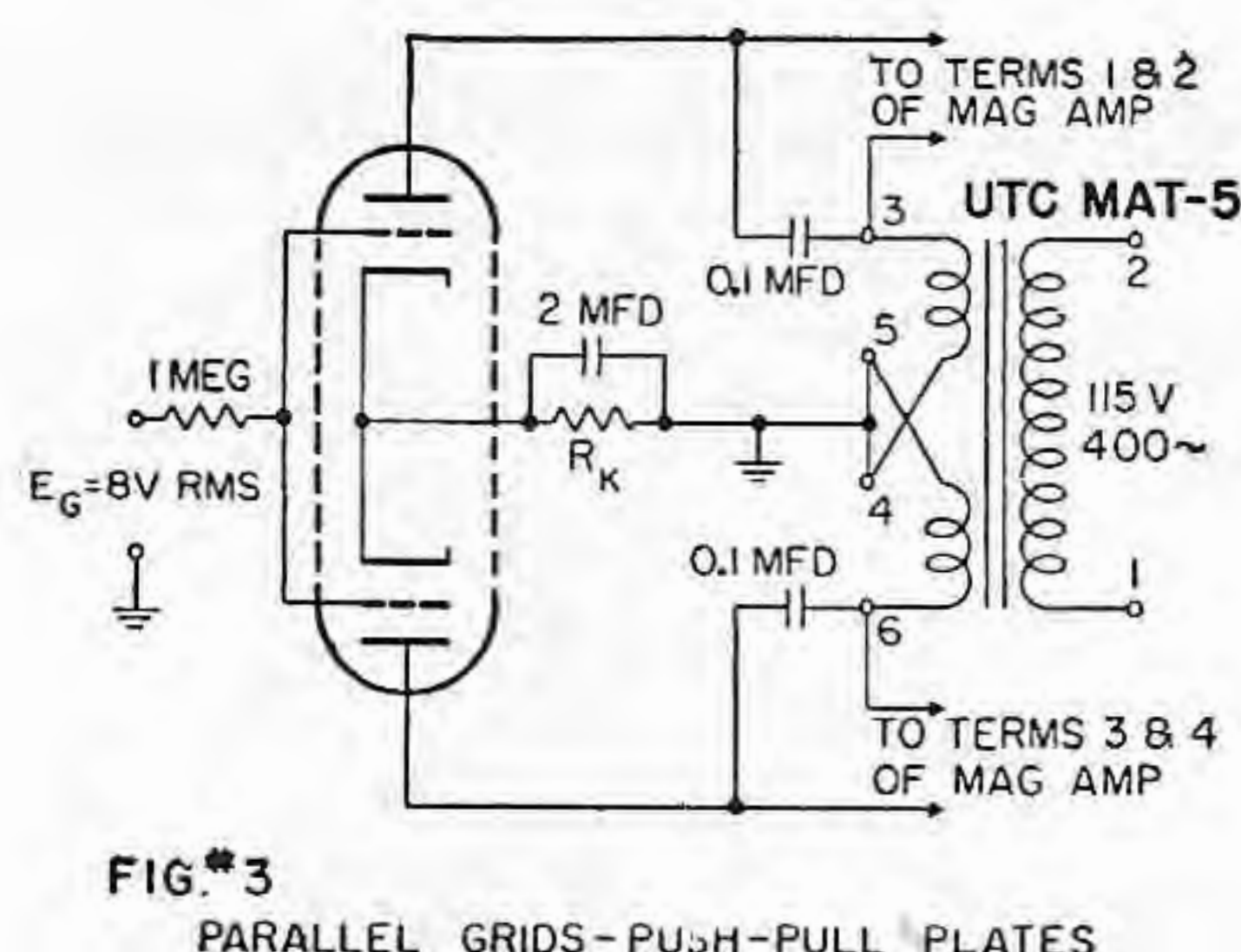
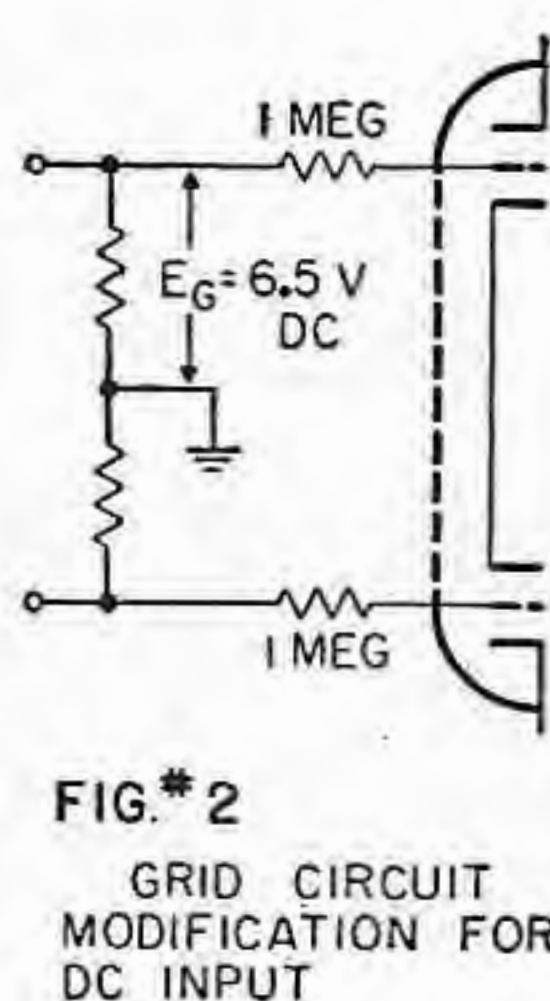
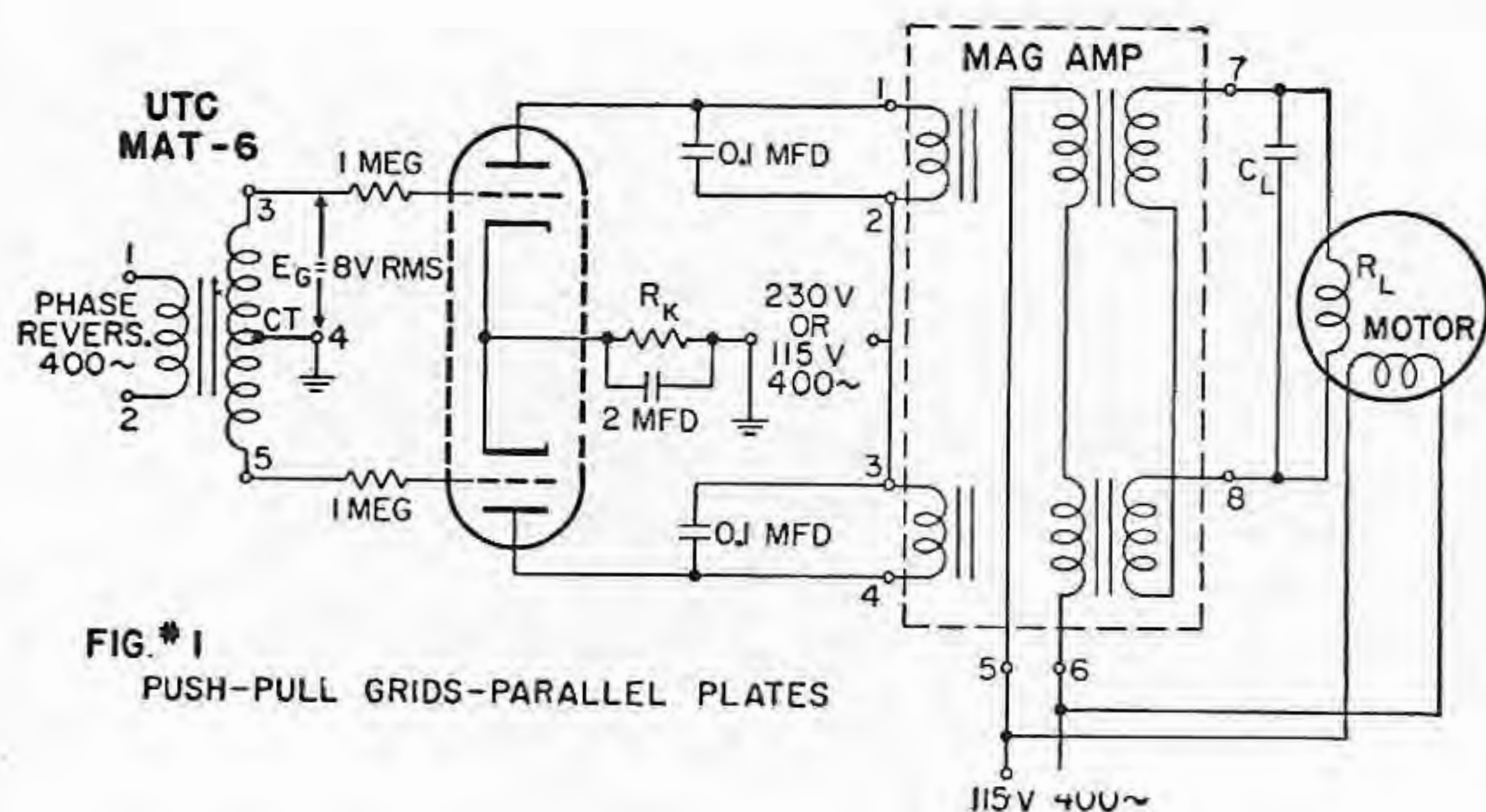
MAGNETIC AMPLIFIERS FOR SERVO MOTOR APPLICATIONS

Hermetically sealed to MIL-T-27A Specs., see back cover . . . all units MIL type TF4SY40YY

The MAT 1-4 Magnetic Amplifiers are exceptionally stable units designed for the control of 2 phase, 115V., 400 cycle servo motors. They are compact . . . hermetically sealed . . . magnetically shielded . . . and meet MIL-T-27A and MIL-E-5400 Specifications. The output is sinusoidal, amplitude variable, and phase reversible. Control is provided by a dual triode such as 12AU7 operating with a plate voltage of 115 volts, 400 cycles, or higher. The signal to the triode grids can be polarity reversible DC or phase reversible 400 cycles with or without suppressed carrier modulation. These units eliminate DC power requirements as well as temperature sensitive dry disc rectifiers. The high input impedance provides minimum loading on sensing elements and high power gain. Ringing at low load level has been reduced to a minimum

through high internal damping factors. The power output figures are conservative . . . power gain of the MAGNETIC STRUCTURE is approximately 40 . . . response time approximately 7.5 milliseconds. The maximum null voltage is 3 volts RMS. For single phase supply voltage the load capacitor should effect 90° phase shift with motor load . . . for 3 phase, 30° phase shift. (The chart values shown are approximate.)

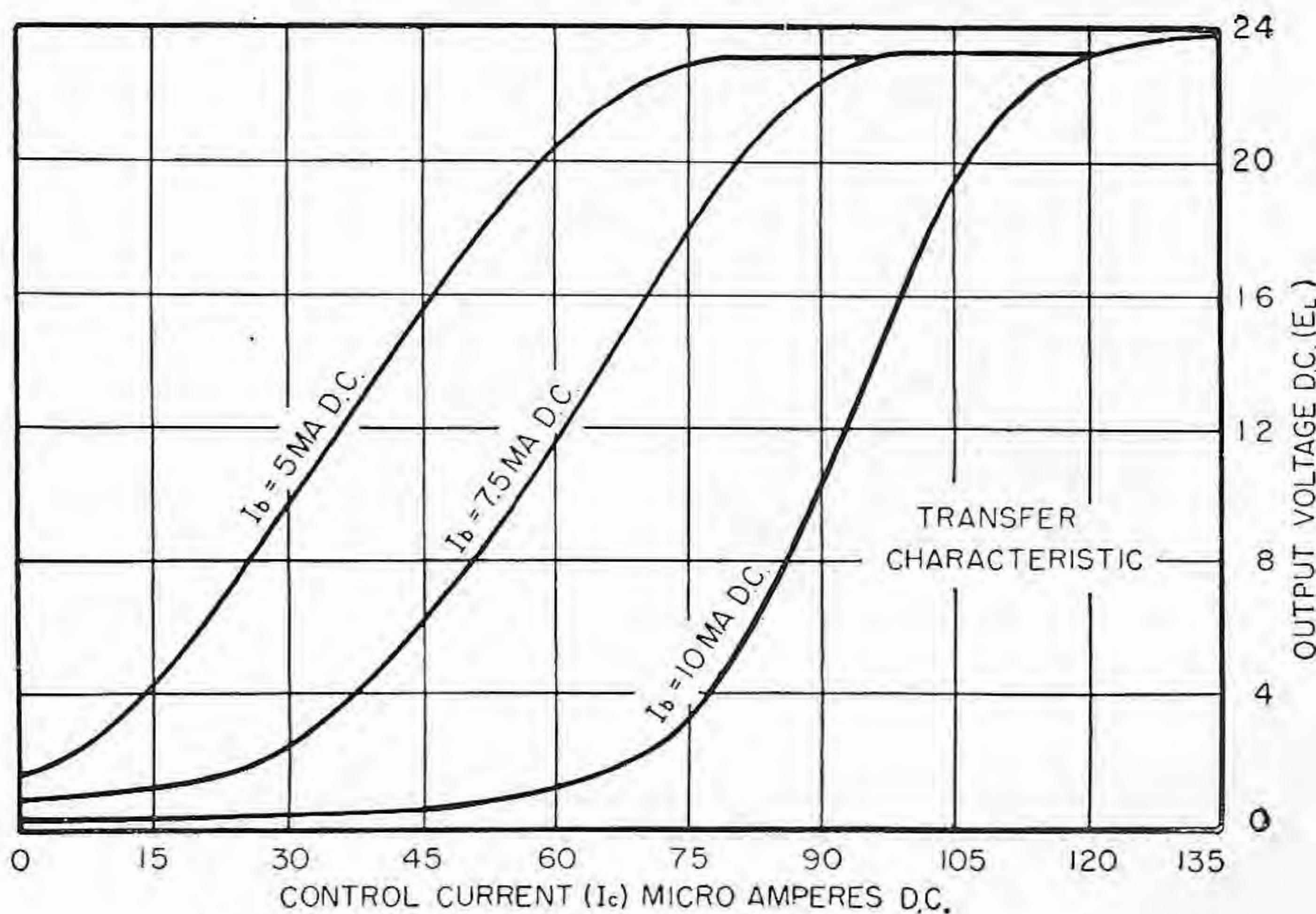
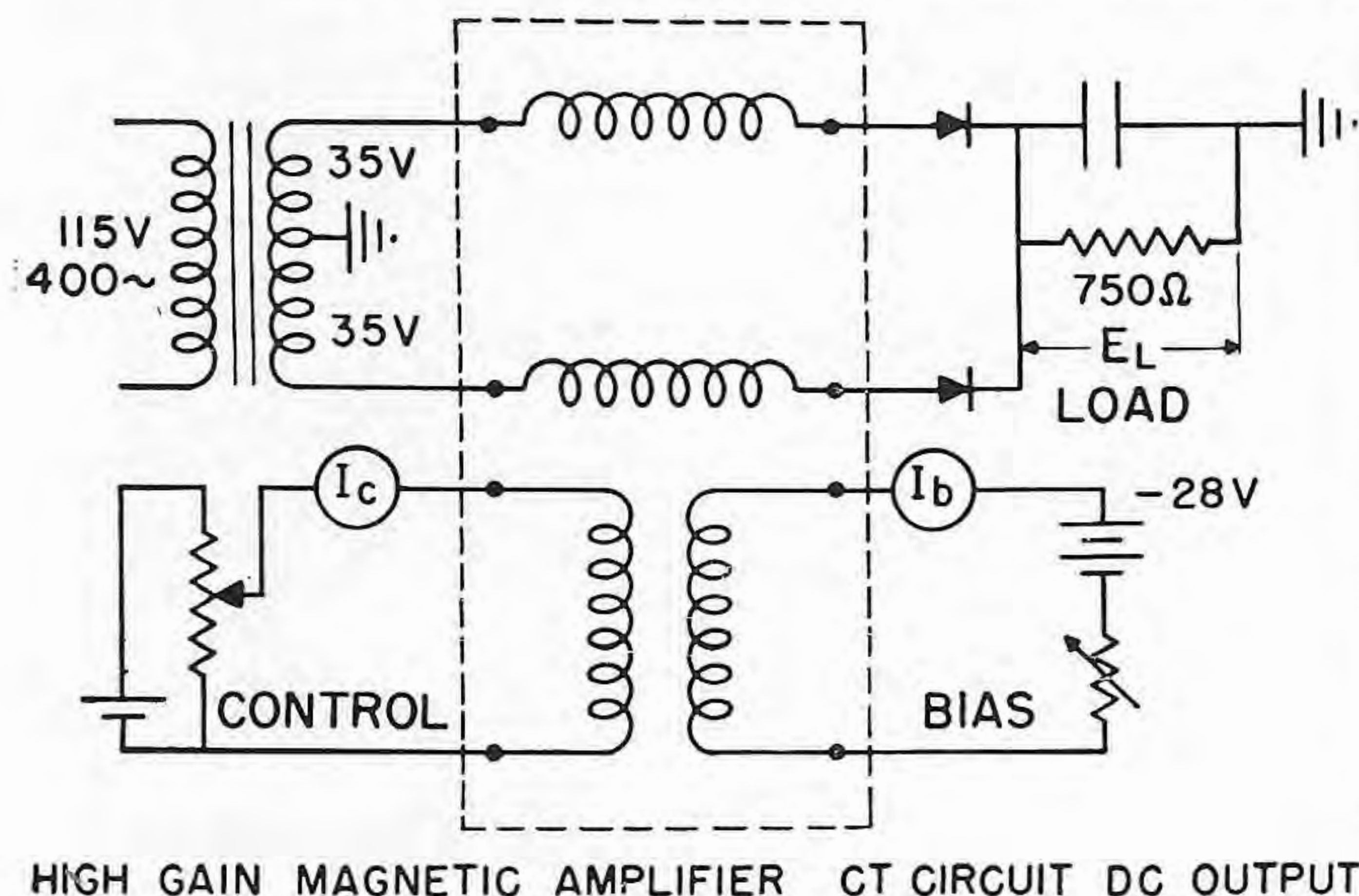
For AC signal control the circuit of Figure 1 is employed. For DC signal control Figure 2 applies. Figure 3 shows the use of a power transformer (MAT-5) which provides higher plate voltages (230 volt supply data of chart) and eliminates the input transformer (MAT-6). The typical response curve of Figure 4 applies to all units, the larger units feeding heavier loads.

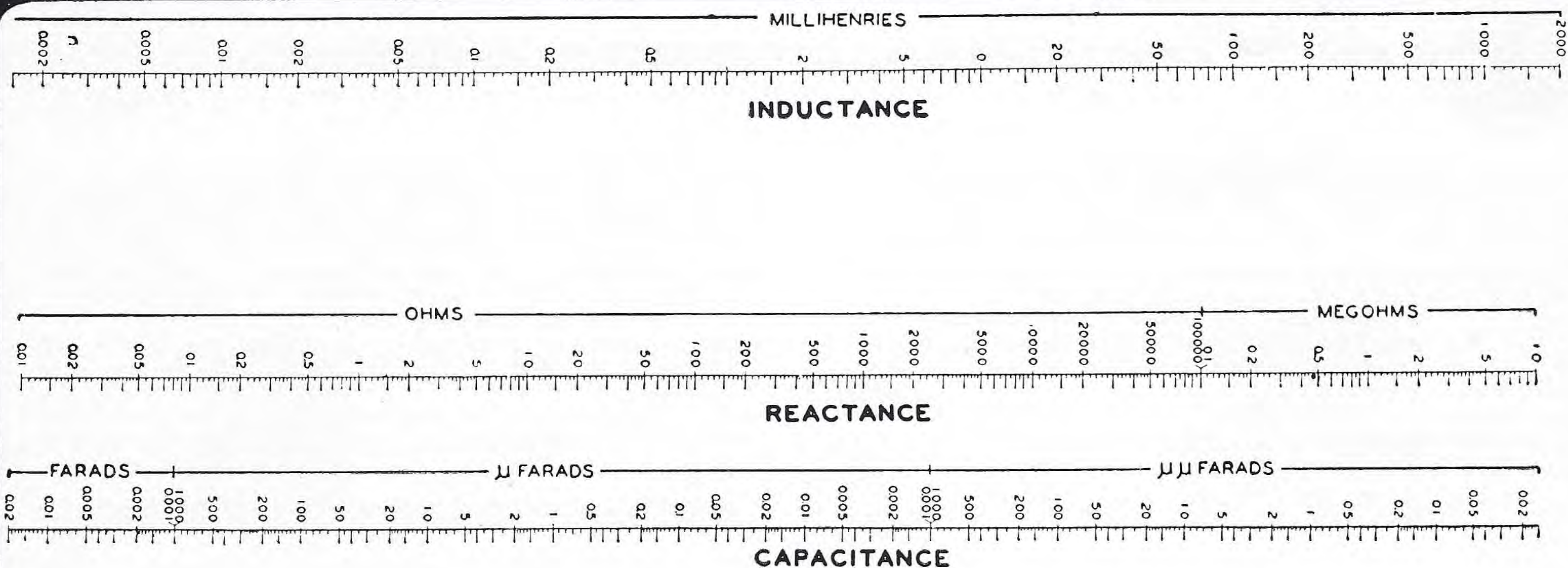


Type No.	MAT-1	MAT-2	MAT-3	MAT-4
230 Volt Supply				
Power output	4 W.	8 W.	11 W.	18 W.
RL, ohms	3300	1600	1200	720
CL, mfd.	.2	.3	.5	.7
115 Volt Supply				
Power output	2 W.	4 W.	6 W.	9 W.
RL, ohms	6500	3300	2200	1450
CL, mfd.	.13	.2	.3	.45
Reson. Freq.	40 cyc.	35 cyc.	35 cyc.	20 cyc.
Log-Decr.	.18	.23	.03	.65
Cont. Wdg. Res.	6200 ohms	8450 ohms	4750 ohms	5650 ohms
Case.				
Length, in.	1 1/4	1 1/2	1 3/4	2 1/8
Width, in.	1 1/8	2 1/8	2 1/2	3 1/8
Height, in.	2 3/8	2 3/4	2 15/16	3 3/8
Mtg. Dim., in.	1 3/8 x 1 1/2	1 x 1 5/8	1 1/8 x 1 1/8	1 1/2 x 2 1/2
Studs, stainless	4-40	6-32	8-32	8-32
Cutout, in.	1	1	1	1
Unit Weight, lbs.	.67	1.1	1.7	2.75
MAT-5 115V.-400 cyc. to 460 VCT; provides 230V. 48 MA DC or 460V. 24 MA DC. RC-37 Case . . . 1 3/8 x 1 3/8 x 1 3/8 . . . 1/8 mtg. holes 1 1/8 x 1 1/8 . . . 6 oz. MIL type TF4SY02YY.				
MAT-6 Input . . . 10,000 ohms pri. . . 1:15 C.T. ratio . . . phase shift under 1° . . . RC-25 case. MIL type TF4RX10YY.				

TYPICAL SPECIAL HIGH GAIN SELF SATURATING MAGAMP

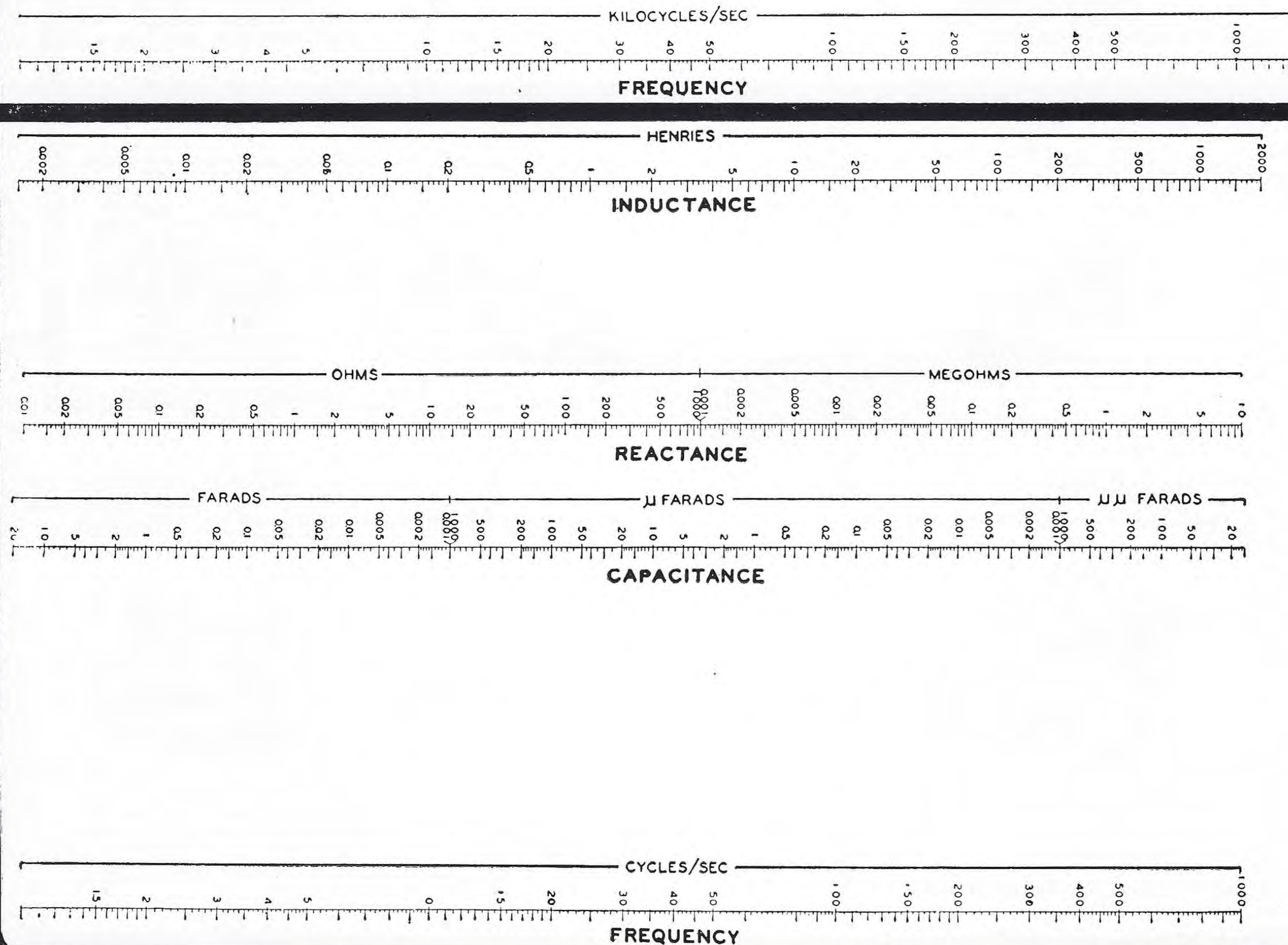
The circuit and curves below represent a typical high gain (approximately 150,000) magamp. The circuit is the center tap type for DC output. Transfer characteristics are shown for three bias conditions. While only one control winding is shown, multiple control windings are commonly employed.





REACTANCE – FREQUENCY CHART

A straight edge across known values in any two columns will locate the corresponding values in the other two columns. For example, take an inductance of 1 Henry at 50 cycles. A straight edge across these points will intersect the reactance line at 310 ohms, and the capacity line at 10 mfd. indicating the capacity required for resonance.





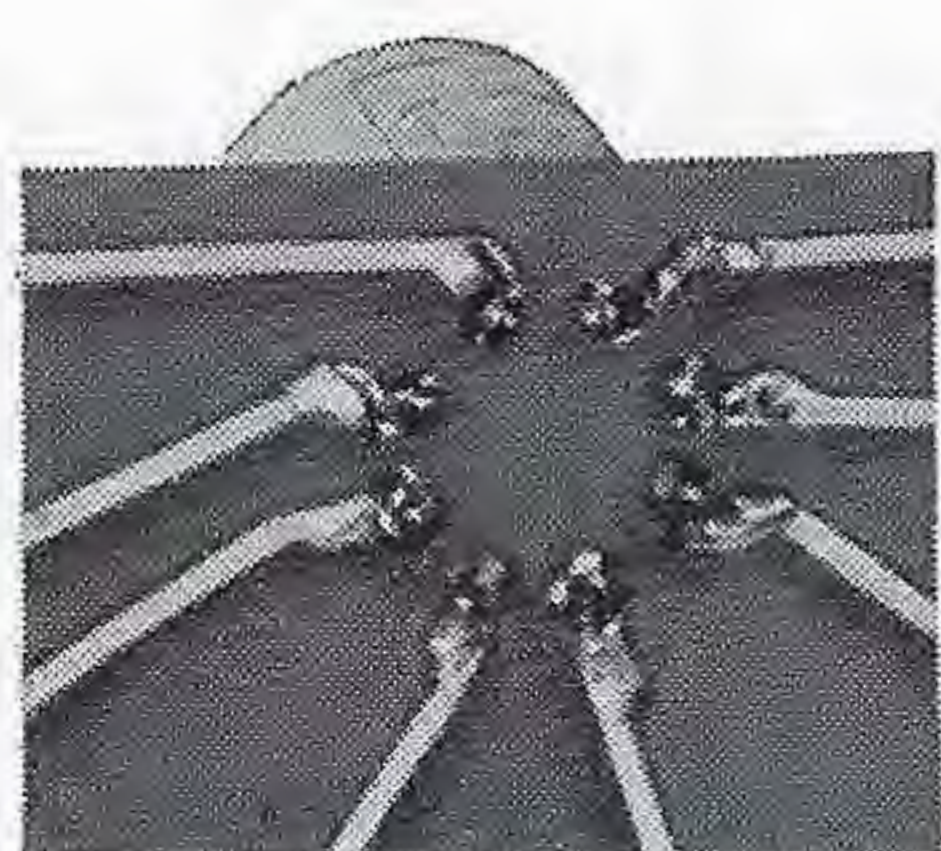
COMPONENTS FOR PRINTED CIRCUITS

With the increasing usage of printed circuitry in electronic equipment, a large part of the UTC stock components have been designed specifically with printed circuits in mind. Examples of these specifically designed groups are the DO-T and DI-T series, the Miniductor and Minifilter groups, and the miniature pulse transformers.

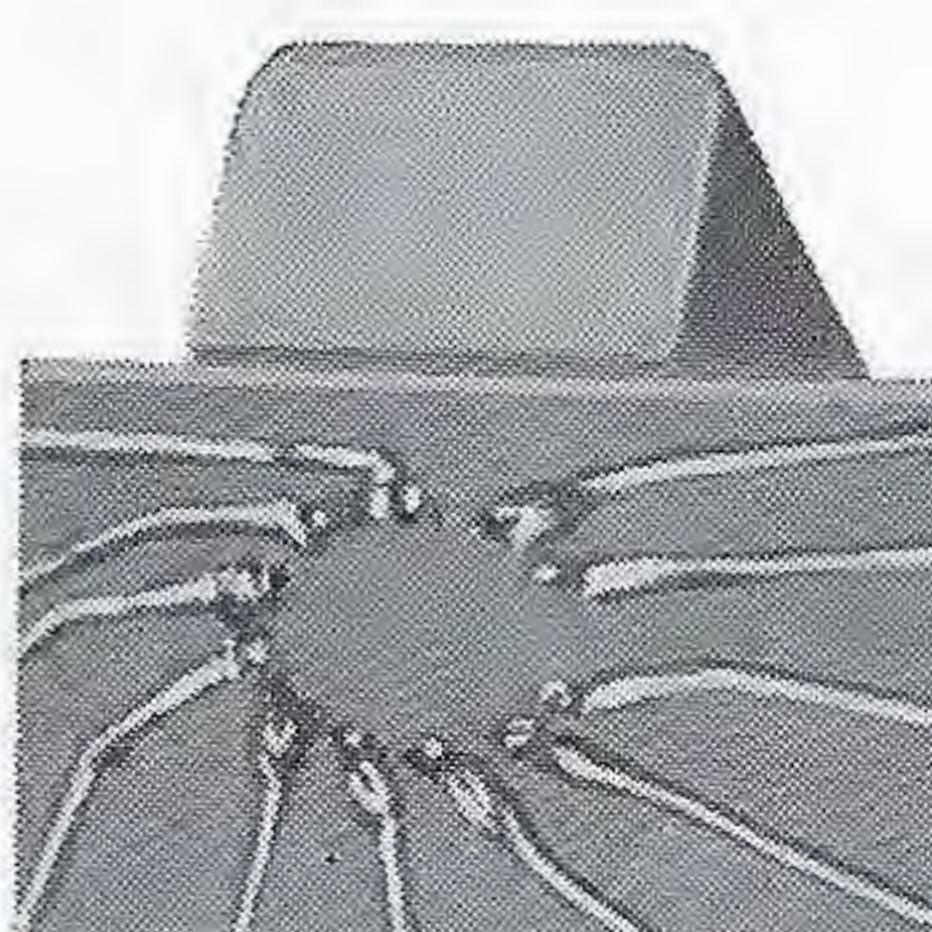
Other lines are readily adaptable. The hermetic miniature and subminiature audios listed on page 26 are readily adapted to printed circuitry by straightening out the wire loop terminals.

These units are available with straight terminals on production orders. The slotted terminals on UTC Ouncer (page 29) and Ultra-compact (page 36) transformers are finding increasing use in printed circuitry. When these units are used with a printed circuit, the prongs are slightly spread out after insertion in the printed circuit board holes. This provides good support for the unit, as well as rigid close contact between terminal and printed circuit before soldering. Special units are available in cased, molded, and open structures specifically for printed circuit use. Illustrations of both stock and special types are given below.

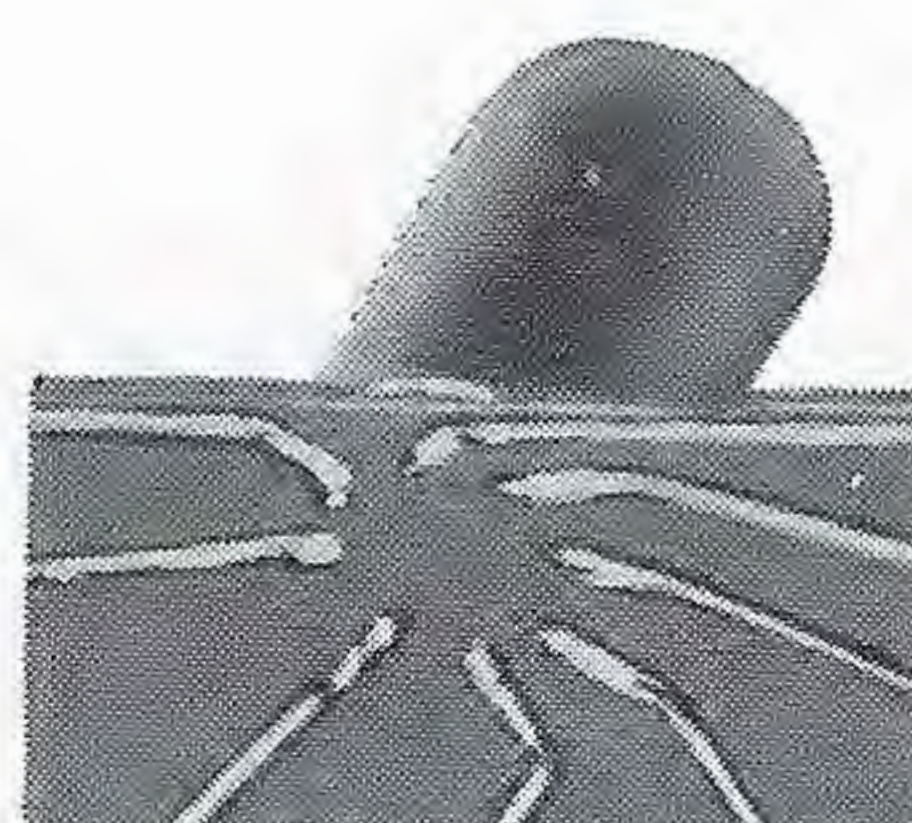
STOCK TRANSFORMERS IN PRINTED CIRCUITS



OUNCER.



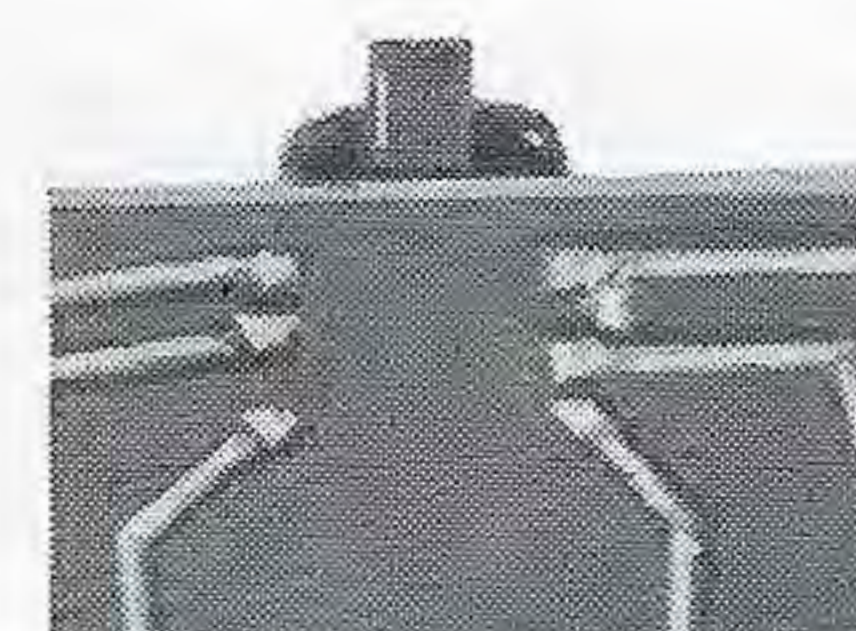
ULTRACOMPACT.



H AUDIO.

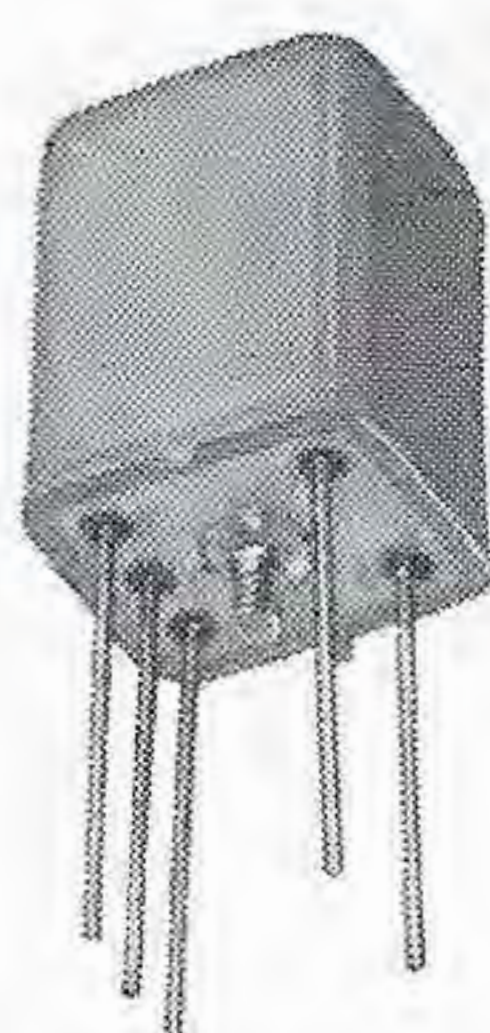


MINIATURE PULSE.



SUBOUNCER.

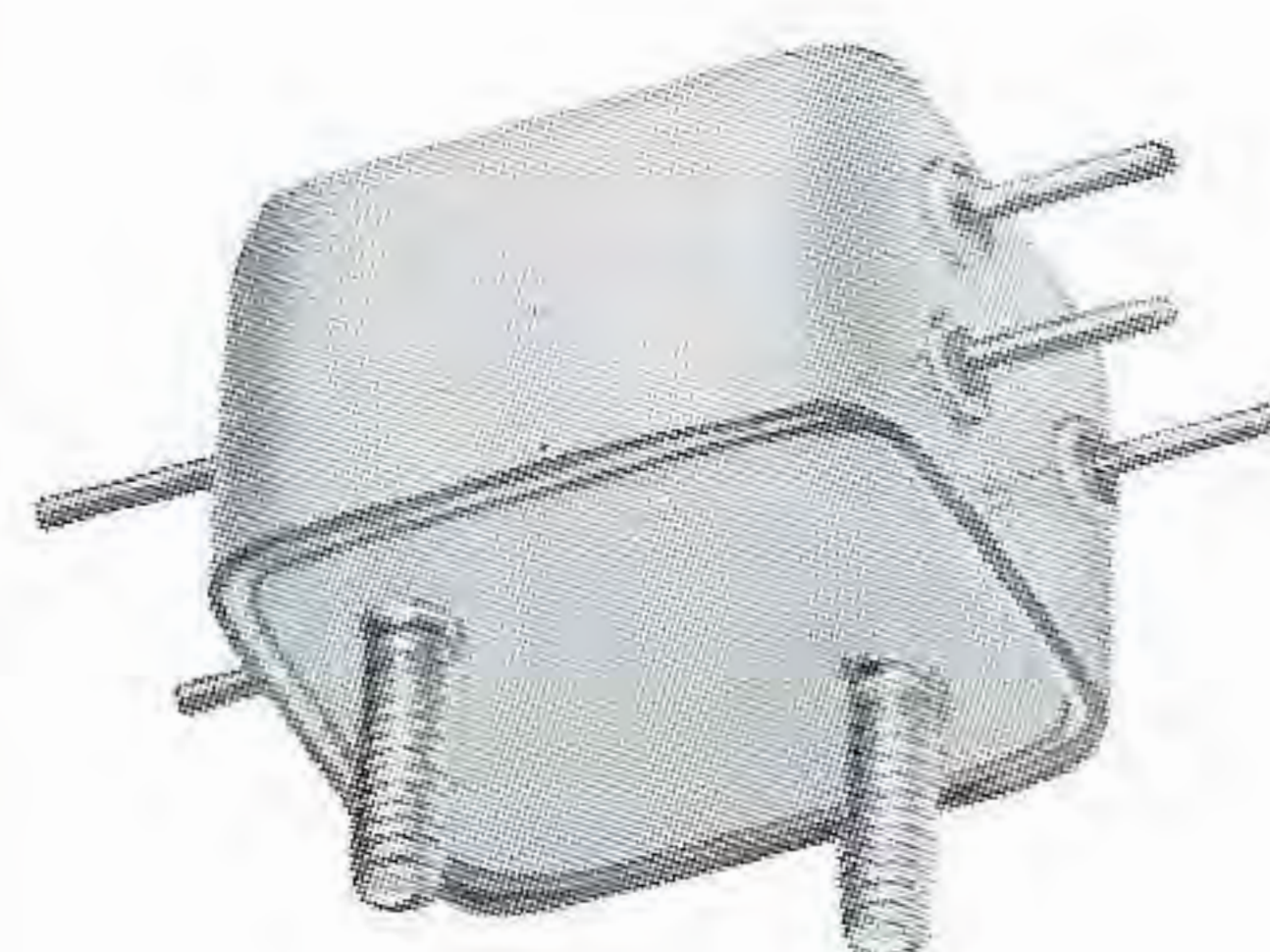
SPECIAL TRANSFORMERS FOR PRINTED CIRCUITS



SOM CASE TAKES SUBOUNCER UNITS, $\frac{3}{4} \times \frac{5}{8} \times 1\frac{1}{16}$ ", 1.2 oz.



MOLDED AUDIO UNITS, OUNCER TYPES.



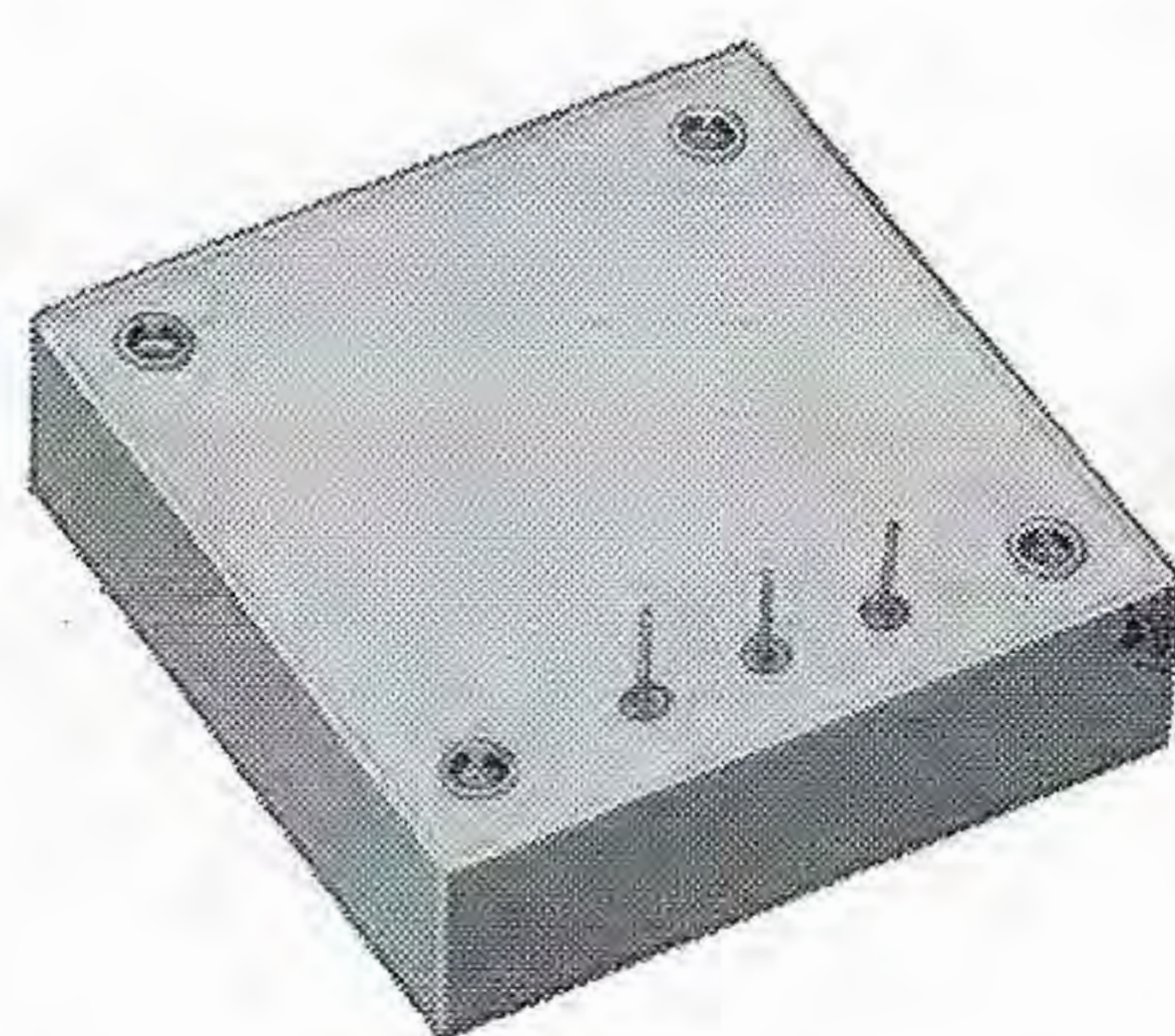
SERVO TRANSFORMERS, 400 cycle, low phase shift.



FLAT SM CASE TAKES SUBOUNCER UNITS, $\frac{27}{32} \times \frac{23}{32} \times \frac{5}{16}$ ", .8 oz.



PLUG IN MAGAMP FOR PC SOCKET, includes interstage transformer.



FLAT ($\frac{1}{2}$ ") LOW FREQUENCY FILTER, MIL-T-27A.



150 KC MOLDED ($\frac{1}{2}$ " Dia. x $1\frac{1}{4}$ ") MINIATURE FILTERS.



PULSE TRANSFORMER MIL-T-27A Grade 4, Class S.



PULSE COMPONENTS TO SPECIFICATIONS

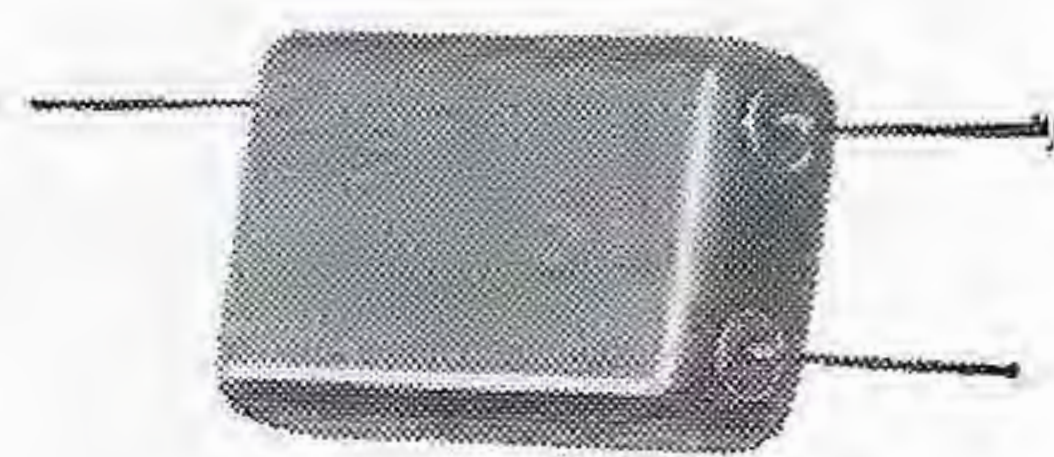
Because of the greatly varied nature of pulse component application, UTC stock items cover only low power transistor and tube requirements. The units illustrated below are intended to show some of the thousands of special units produced by UTC and to provide the equipment engineer with a concept of the possibilities in present special pulse circuit units.



Output to 2J42 magnetron. Input 1300 V.-50 ohms. Output 6.5 KV to 1200 ohms and .6A. bifilar filament winding. .15 μ sec., 1000 PPS. Trigger winding. MIL-T-27A Grade 5; $1\frac{1}{2}$ x $2\frac{1}{2}$ x $2\frac{3}{4}$, 10 oz.



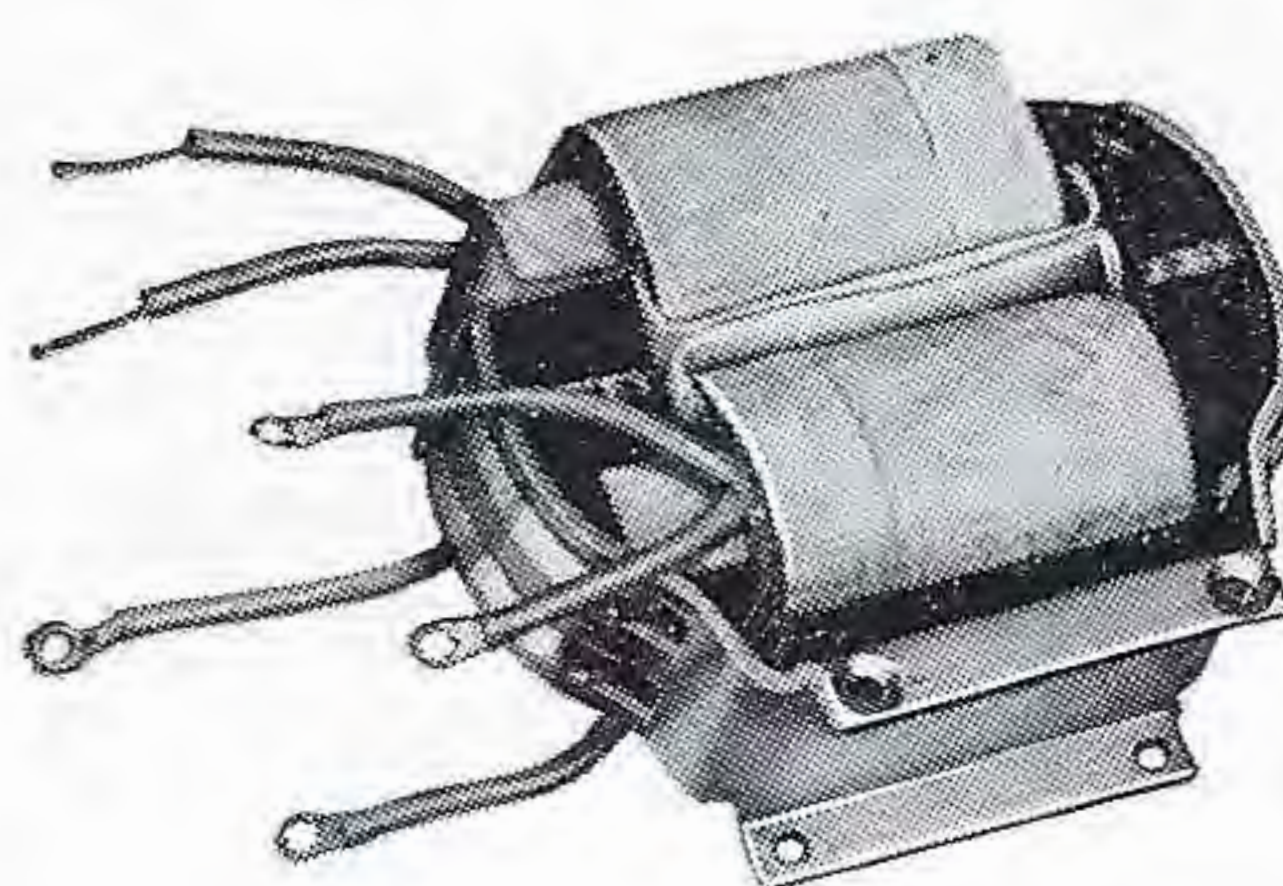
Output to Klystron. 3.5 μ sec. pulses in group of pulse trains at high rep. rate. 1% droop over pulse train. 43 KV Hipot. MIL-T-27A; NA case; $4\frac{1}{4}$ x 5 x $6\frac{3}{4}$, 11 $\frac{1}{2}$ lb.



Differentiating pulse transformer. Input 150 V. 40 MA peak, 6 μ sec., 3000 PPS. Output 30 V. .5 μ sec. Ferrite core. Rise, droop, and pulse duration held to 5%. MIL-T-27A, -55° C. to + 100° C.; $5/16$ x $5/8$ x 1, 7 grams.



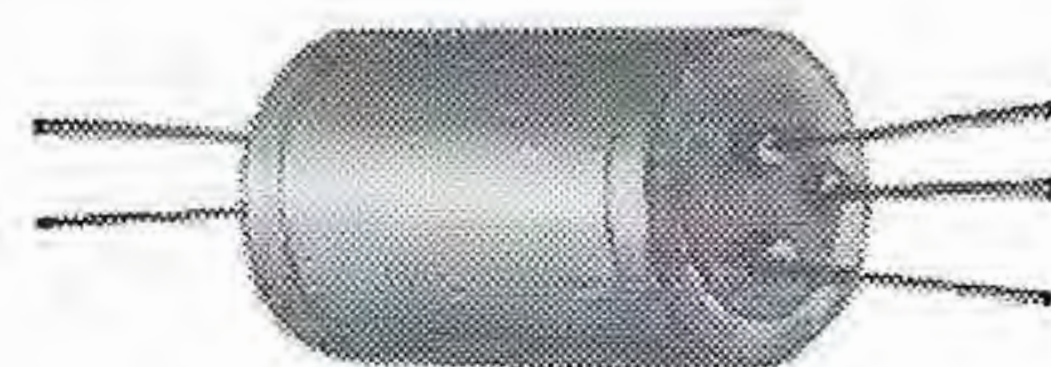
Pulse current transformer, Thyatron cathode to 50 ohms. Input 100A. Output 200 V. to 50 ohms. .5/2.4 μ sec. 2000 PPS. MIL-T-27A; $1\frac{3}{4}$ x $1\frac{1}{4}$ x $1\frac{1}{4}$, 2 oz.



Output to magnetron. Input 6 KV peak 2.5 μ sec. or .5 μ sec. Output 28 KV-27 A. peak and 14.2A. bifilar magnetron filament winding. MIL-T-27A, 170° C.; $2\frac{5}{8}$ x $5\frac{3}{8}$ x $4\frac{5}{8}$, 7 $\frac{1}{2}$ lb.



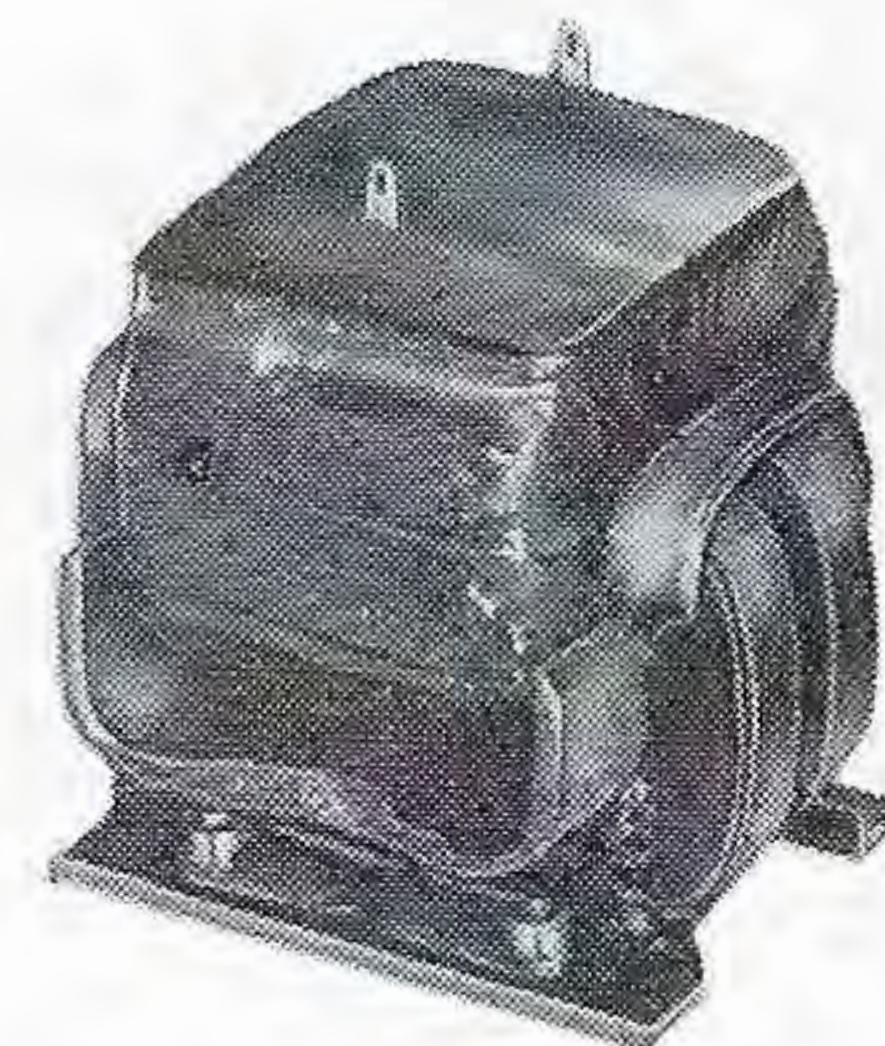
Ferrite core pulse transformer. 30 V. . . . three windings, 5-10 μ sec. Couples to magnetic tape head for high speed read in and out. Hiper-malloy shield. Commercial; $5/8$ x $1\frac{1}{4}$ x $1\frac{5}{8}$, 2 oz.



Blocking oscillator transformer. .5 μ sec. pulse held to 2% in test circuit from -65° C. to + 100° C. Wound core. MIL-T-27A; $3/8$ diameter - $5/8$ long, 4 grams.



Free running blocking oscillator transformer. 600 ohms, 1:1:1, 5 μ sec. $\pm$ 1, 12000 $\pm$ 10% PPS. Output 600 V. $\pm$ 10%. Temperature stable -62° C. to 85° C. MIL-T-27A; $3/4$ x $1\frac{1}{4}$ x $1\frac{1}{8}$; $1\frac{1}{2}$ oz.



Linear charging reactor for line type pulser. 20 Hys., .11A. DC, 5 KV, 1000 PPS, 11 KV hipot. MIL-T-27A, 200° C.; $3\frac{1}{4}$ x 4 x $3\frac{3}{4}$, 3 lb.



Gaussian wave shape pulse output. Input 2 KV, 3.5 μ sec. Output 2.5 KV-5A., 80 KC rate. Corona free-35,000 feet. MIL-T-27A; $1\frac{5}{8}$ x $1\frac{5}{8}$ x $3\frac{7}{8}$, 1 lb.



1:1:3 wound core blocking oscillator transformer. .05 μ sec. pulse, 400 KC PPS. MIL-T-27A; $3/8$ diameter x $3/8$, 1 gram.



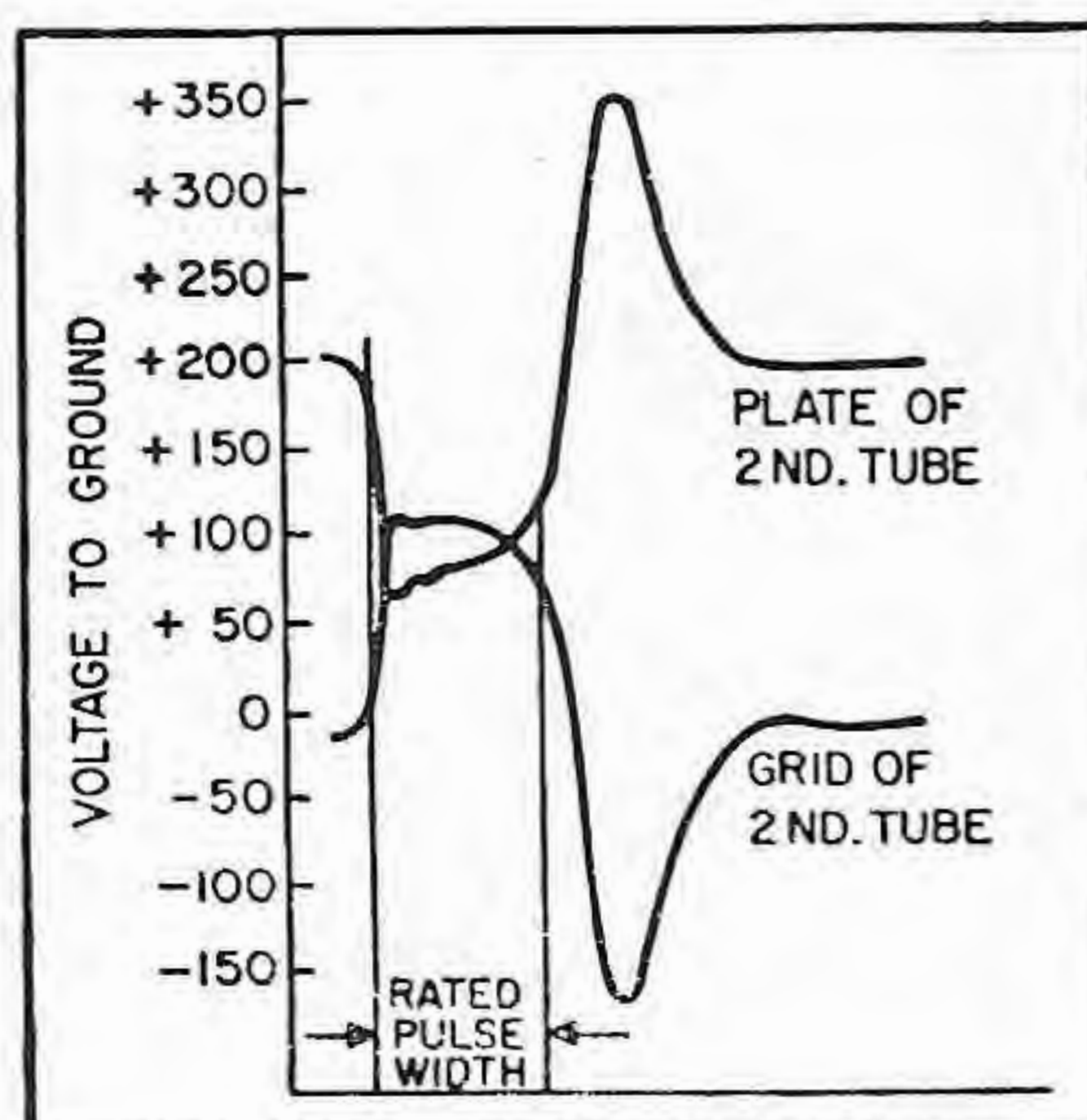
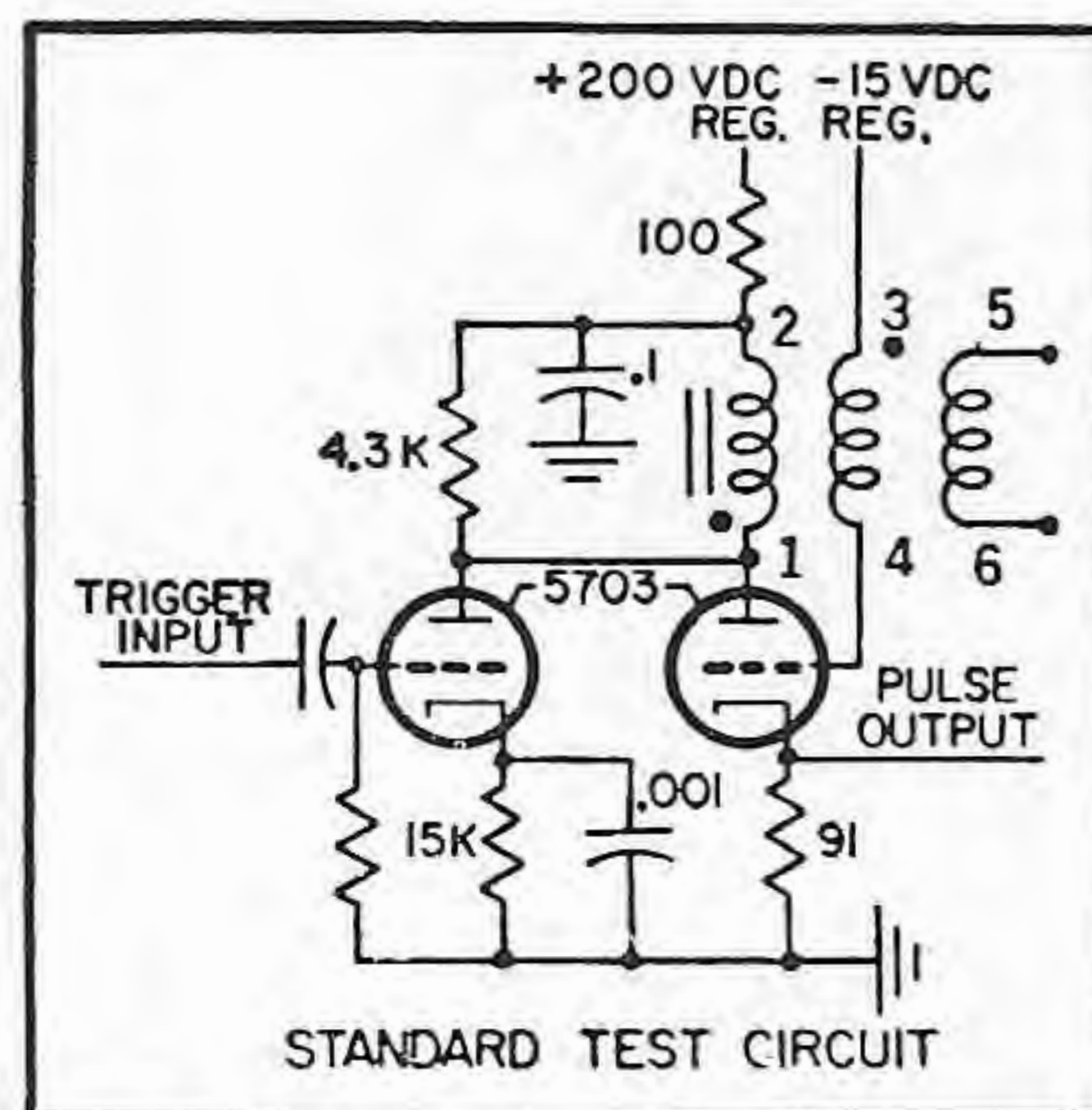
Square wave transformer. Input 10 V. 100 cycles from 200 ohm source. Two 40 V. and one 200 V. outputs. Droop 5% max. Rise and fall time 50 μ sec. max. MIL-T-27A; $1\frac{3}{4}$ x $1\frac{1}{4}$ x $2\frac{1}{2}$, 14 oz.



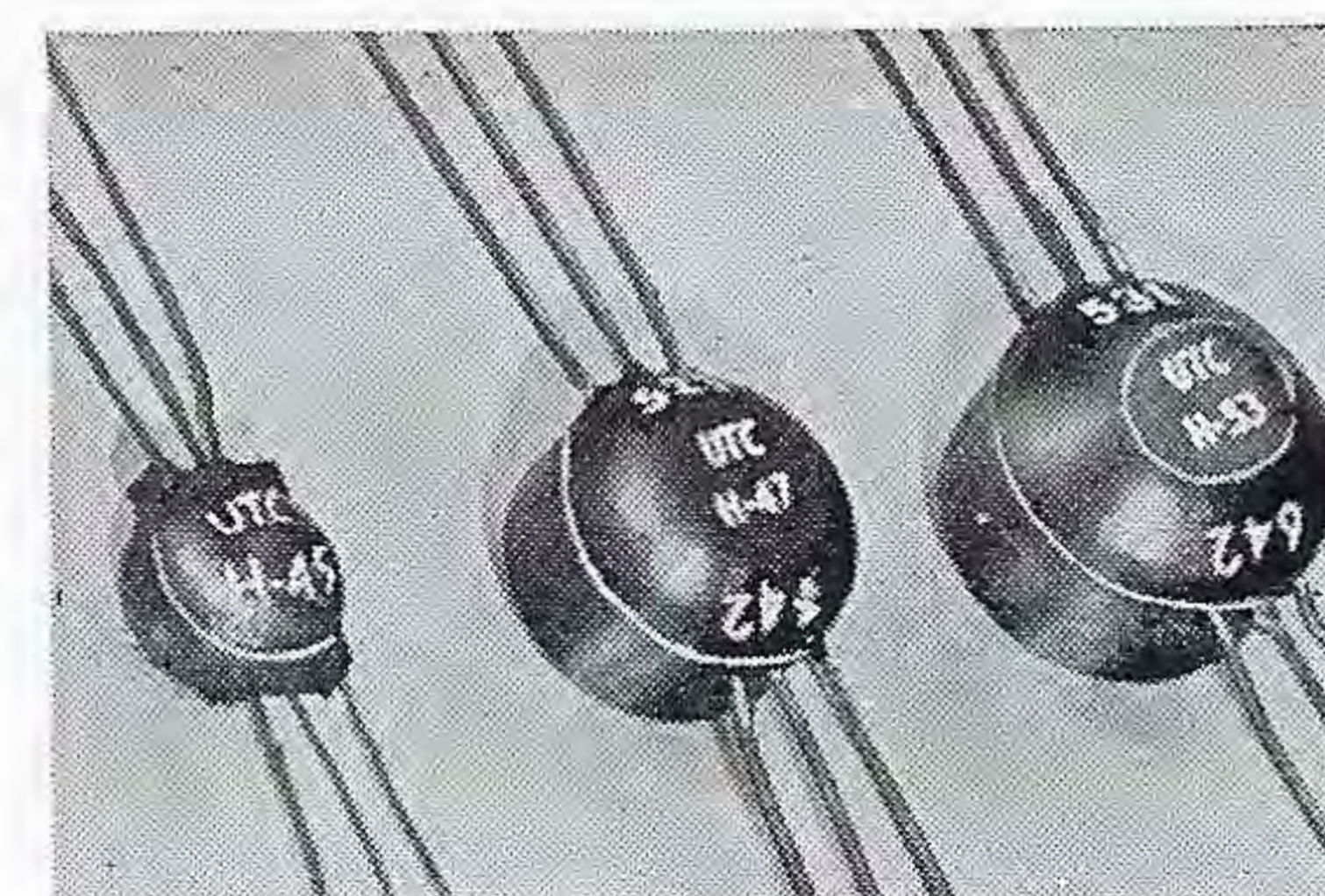
MINIATURE WIDE APPLICATION PULSE TRANSFORMERS

Hermetically sealed to MIL-T-27A Specs., see back cover . . . all units MIL type TF5SX36ZZ

UTC miniature, wound core, pulse transformers are precision, high reliability units, hermetically sealed by vacuum molding and suited for service from -70°C. to $+130^{\circ}\text{C.}$ Wound core structure provides excellent temperature stability (unlike ferrite). Designs are high inductance type to provide minimum of droop and assure true pulse width, as indicated on chart below. If used for coupling circuit where minimum rise time is important, use next lowest type number. Rise time will be that listed for this lower type number . . . droop will be that listed multiplied by ratio of actual pulse width to value listed for this type number. Blocking oscillator data listed is obtained in standard test circuit shown. Coupling data was obtained with H. P. 212A generator (correlated for H-55,56,57) and source/load impedance shown. 1:1:1 ratio.



Testing small pulse transformers.



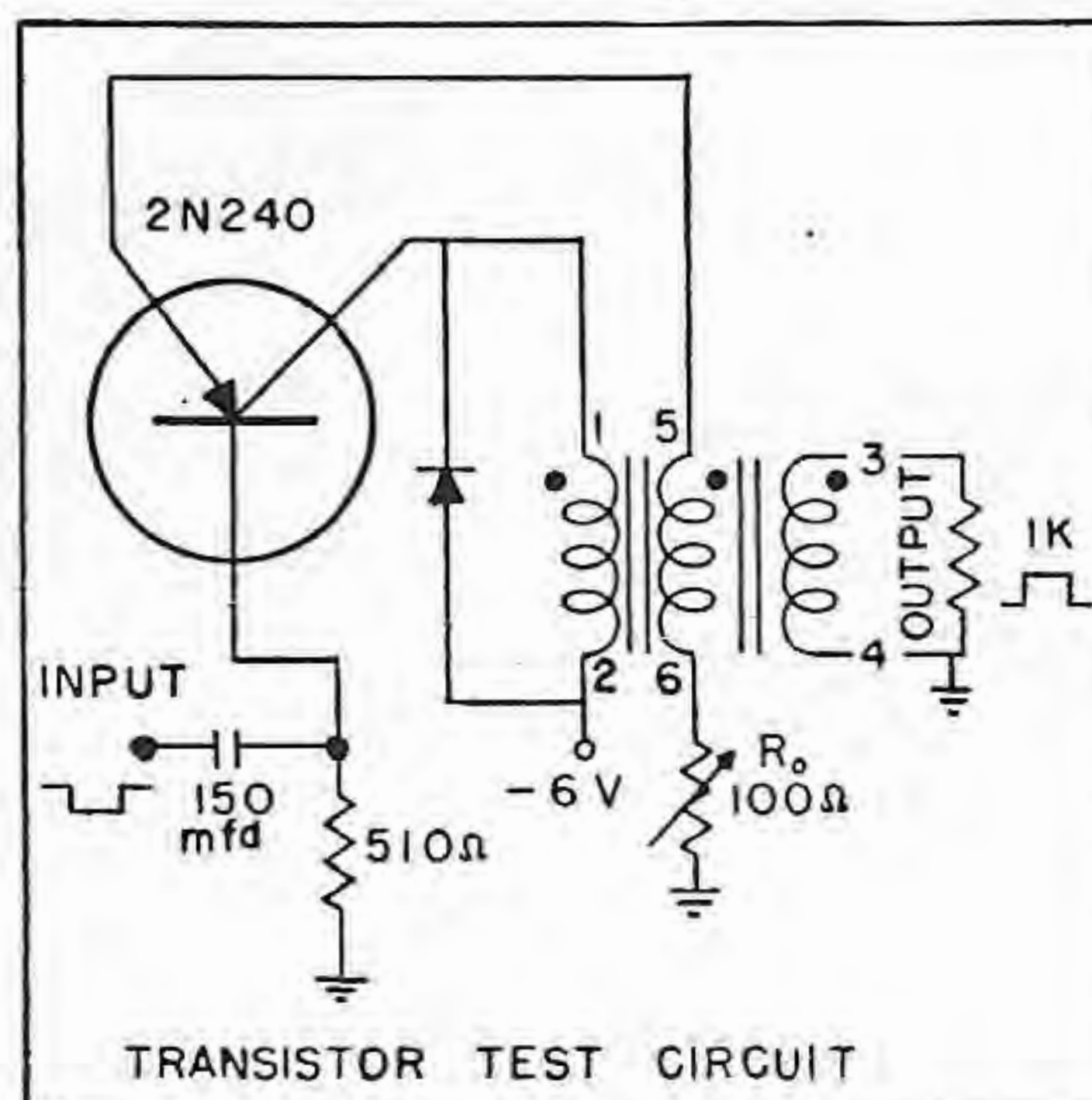
For Spring Clip Mounting, use Augat No. 6016-8A for H-47 thru 52 . . . No. 6014-20A for H-53 thru 58.

APPROX. DCR, OHMS				BLOCKING OSCILLATOR PULSE					COUPLING CIRCUIT CHARACTERISTICS							DIMENSIONS		
Type No.	1-2	3-4	5-6	Width μ Sec.	Rise Time	% Over Shoot	Droop %	% Back Swing	P Width μ Sec.	Volts Out	Rise Time	% Over Shoot	Droop %	% Back Swing	Imp. in, out, ohms	L In.	W In.	Wt. Grams
H-45	3	3.5	4	.05	.022	0	20	10	.05	17	.01	20	0	35	250	$\frac{3}{8}$	$\frac{3}{8}$	1
H-46	5.5	6.5	7	.10	.024	0	25	10	.10	19	.01	30	10	50	250	$\frac{3}{8}$	$\frac{3}{8}$	1
H-47	3.7	4.0	4	.20	.026	0	25	8	.20	18	.01	30	15	65	500	$\frac{1}{16}$	$\frac{1}{16}$	4
H-48	5.5	5.8	6	.50	.03	0	20	5	.50	20	.01	30	20	65	500	$\frac{1}{16}$	$\frac{1}{16}$	4
H-49	8	8.5	9	1	.04	0	20	10	1	24	.02	15	15	65	500	$\frac{1}{16}$	$\frac{1}{16}$	4
H-50	20	21	22	2	.05	0	20	10	2	27	.05	10	15	35	500	$\frac{1}{16}$	$\frac{1}{16}$	4
H-51	28	31	33	3	.10	1	20	8	3	26	.07	10	10	35	500	$\frac{1}{16}$	$\frac{1}{16}$	4
H-52	36	41	44	5	.13	1	25	8	5	23	.15	10	10	45	1000	$\frac{1}{16}$	$\frac{1}{16}$	4
H-53	37	44	49	7	.28	0	25	8	7	24	.20	10	10	50	1000	$\frac{5}{8}$	$\frac{5}{8}$	6
H-54	50	58	67	10	.30	0	20	8	10	24	.25	10	10	50	1000	$\frac{5}{8}$	$\frac{5}{8}$	6
H-55	78	96	112	16	.75	0	20	10	16	23	.40	5	15	20	1000	$\frac{5}{8}$	$\frac{5}{8}$	6
H-56	93	116	138	20	1.25	0	25	10	20	23	.6	5	10	10	1000	$\frac{5}{8}$	$\frac{5}{8}$	6
H-57	104	135	165	25	2.0	0	30	10	25	24	1.5	5	10	10	1000	$\frac{5}{8}$	$\frac{5}{8}$	6
H-58	Pulse transformer kit. Consists of one of each of the above units in a partitioned plastic case. Ideal for the laboratory.																	

MINIATURE TRANSISTOR PULSE TRANSFORMERS

UTC miniature transistor pulse transformers are precision, wound core units, similar to the tube types listed above, but specifically designed for transistor applications. All types are similar in size to the H-45 . . . $\frac{3}{8} \times \frac{3}{8}$, 1 gram. Ratio 4:4:1. Data based on 1 V. input trigger.

Type No.	Pulse Width $\mu\text{Sec.}$ $R_o=0$	Rise Time $\mu\text{Sec.}$	Droop %	Volts Out
H-60	.05	.020	20	4
H-61	.1	.024	20	5.1
H-62	.2	.026	18	6.2
H-63	.5	.027	12	7
H-64	1	.033	10	7.6
H-65	2	.066	10	6.5
H-66	3	.087	10	6.2
H-67	5	.097	12	7.1
H-68	10	.140	12	6.5
H-69	Transistor pulse transformer kit, consists of H-60 thru H-68 in plastic case. Ideal for laboratory			



DEFINITIONS

Amplitude: Intersection of leading pulse edge with smooth curve approximating top of pulse.

Pulse width: Microseconds between 50% amplitude points on leading and trailing pulse edges.

Rise Time: Microseconds required to increase from 10% to 90% amplitude.

Overshoot: Percentage by which first excursion of pulse exceeds 100% amplitude.

Droop: Percentage reduction from 100% amplitude a specified time after 100% amplitude point.

Backswing: Negative swing after trailing edge as percentage of 100% amplitude.



SPECIAL AUDIO COMPONENTS

In addition to the needs met by UTC stock audio components there are many unique applications which require special units. The illustrations below are intended to show some of the thousands of special units produced by UTC to customer's specifications.



DI-T tuned interstage transformer. 1,000 ohms to 1,000 ohms. Primary adjusted to 10% tolerance at 400 cycles for tuning with external capacitor. In hipermalloy shield.



Bolometer transformer. Primary 10 ohms, secondary 530,000 ohms, 230:1 ratio, response from 1/2 cycle to 25 cycles. 120 db magnetic shielding plus full electrostatic shielding.



Low distortion 2.5 KW output transformer. PP 450 TH's, 18,500 ohms C.T. to 24/6 ohms. 20 KV hipot, 520 lbs.



Molded output transformer for printed circuit application, 6,200 ohms to 320 ohms, ± 1.5 db 20 cycles to 20KC. MIL-T-27A; 1 x 1 x 1/2, .5 oz.



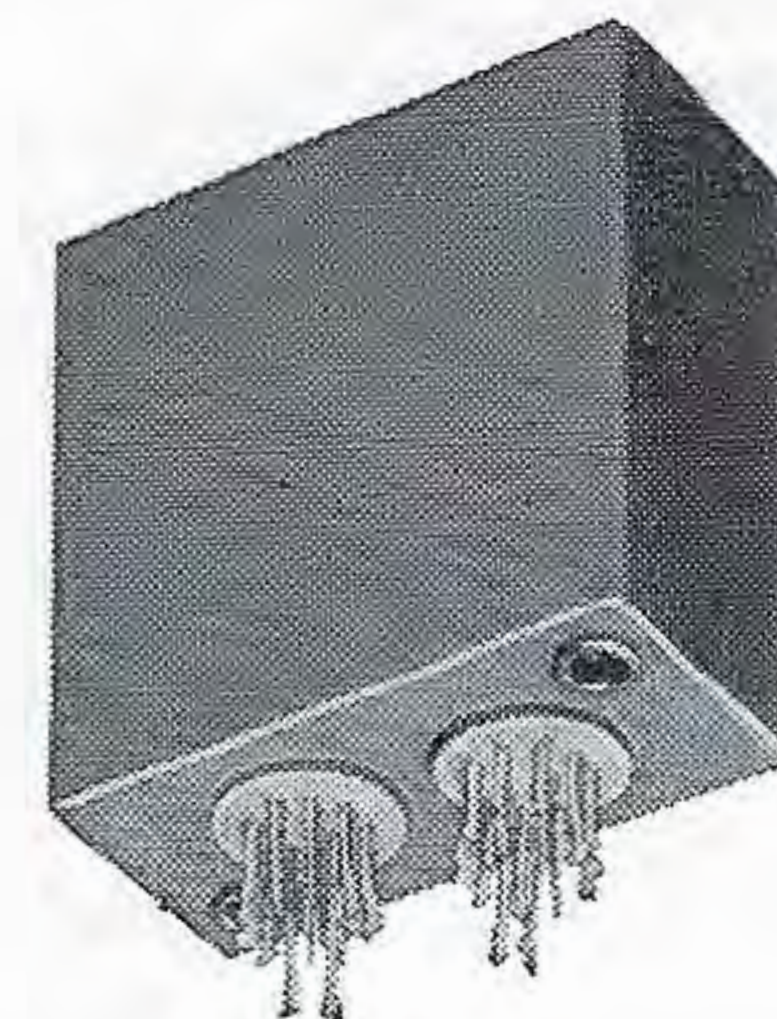
Adjustable DO-T transformer. 10K to 1000 ohms, 100 MW, 200 cycles to 20 KC. Inductance adjustable in equipment to tune with capacitor or to obtain optimum frequency response with minimal distortion.



Broad band input transformer. 30 ohms to 70K, within 1 db, 2 cycles to 6 KC. High magnetic and electrostatic shielding, 1.5 lbs.



400 cycle bridging transformer. 100K to 400K, 80 db. electrostatic shielding, 1 oz.



Matched hybrid transformers. Two transformers each 600 ohm primary, 40,000 ohm C.T. secondary. 250 cycles to 5 KC within 1/4 db. 1/4% C.T. tolerance, 1/2% ratio tolerance, 40 db isolation over band.

MILITARY STANDARD AUDIO TRANSFORMERS

Hermetically sealed to MIL-T-27A Specs., ... see back cover.

UTC MS audio units are not at present considered jobber shelf stock items. Small stocks are usually available at UTC. Prices will be provided on request. Frequency response is 300 cycles to 10 KC, ± 2 db for all types. 600 ohm split provides for 600 ohm CT and

150 ohms. Secondaries of W-3783 are center tapped, providing for 90K CT or 22.5K CT. Electrostatic shielding is provided on W-3784, W-3785, and W-3786. All units are in MIL AJ case, weight .6 lbs.

UTC No.	MS No.	MIL IDENTIF.	APPLICATION	PRI. OHMS	PRI. DC MA	SEC. OHMS	LEVEL
W-3783	90000	TF1RX15AJ001	PP Plates to PP Grids	10K CT	10 Unbal.	90K Split	15 dbm
W-3784	90001	TF1RX16AJ002	Line to V. C.	600 split		4/8/16	2 W.
W-3785	90002	TF1RX10AJ001	Line to PP Grids	600 split		135K CT	15 dbm
W-3786	90003	TF1RX16AJ001	Line to Line	600 split		600 split	15 dbm
W-3787	90004	TF1RX13AJ001	Plate to Line	7600/4800	40 Unbal.	600 split	2 W.
W-3788	90005	TF1RX13AJ002	Plate to V. C.	7600/4800	40 Unbal.	4/8/16	2 W.
W-3789	90006	TF1RX13AJ003	PP Plates to Line	15K CT	10 Unbal.	600 split	2 W.
W-3790	90007	TF1RX13AJ004	PP Plates to Line	24K CT	20 Bal.	600 split	1 W.
W-3791	90008	TF1RX13AJ005	PP Plates to Line	60K CT	20 Bal.	600 split	.5 W.



HERMETIC AUDIOS IN MIL CASES

The units listed on the opposite page are available in MIL cases, where desired, against production orders. MIL case is indicated by adding "M" after type number . . . e.g., H-3 becomes H-3M. RC-25 case units fit MIL AG case. RC-50 case units fit MIL AJ case. SM case units fit MIL AF case.





HERMETIC AUDIO COMPONENTS

Hermetically sealed to MIL-T-27A Specs., see back cover.

For twenty-five years UTC has been the largest supplier of transformer components for military applications, to customer specifications. Listed below are a number of types, to MIL-T-27A specifications, which are now catalogued as UTC stock items. All units employ glass bead headers or terminals. For printed circuit use, wire terminals on glass header units can be straightened out without injury. Straight wire terminals available on production orders as well as flat ($\frac{7}{8}$ x $\frac{23}{32}$ x $\frac{9}{16}$) case for SM units . . . also MIL cases.

The frequency response ratings are based on military requirements. Actually, most of the units that do not carry DC are appreciably better in response than the range shown. For example: H-1, H-3,

H-5, H-8 are within 2db from 30 to 20,000 cycles.

The level ratings are maximum level for reasonable distortion at the lowest frequency specified. For higher frequencies considerably higher levels are permissible. For example, the H-3 will handle +21dbm at 400 cycles.

The Impedance ratings are listed in standard manner. Transformers can be used for applications differing considerably from those shown, keeping in mind that impedance ratio is constant. Lower source impedance will improve response and level ratings . . . higher source impedance reduces them. Units may also be used reversed, input to secondary.



RC-25 CASE

Length $1\frac{13}{32}$ "
Width $\frac{61}{64}$ "
Height $1\frac{1}{16}$ "
Mtg. (slot center) $\frac{1}{8}$ to $1\frac{1}{32}$ "
Screws 4-40 Fil.
Cutout $\frac{7}{8}$ " Dia.
Unit Weight 1.5 oz.



RC-50 CASE

Length $1\frac{5}{8}$ "
Width $1\frac{5}{8}$ "
Height $2\frac{5}{16}$ "
Mounting $1\frac{1}{16}$ "
Screws #6-32
Cutout $1\frac{1}{2}$ " Dia.
Unit Weight 8 oz.



SM CASE

Length $1\frac{1}{16}$ "
Width $\frac{1}{2}$ "
Height $\frac{29}{32}$ "
Screw 4-40 Fil.
Unit Weight8 oz.

MINIATURE AUDIO UNITS . . . RC-25 CASE

Type No.	Application	MIL Type	Pri. Imp. Ohms	Sec. Imp. Ohms	Pri. Unbal. DC MA	Response ± 2 db (Cyc.)	Level max. dbm
H-1	Mike, Unit, line to grid	TF4RX10YY	50, 200 CT, 500 CT*	50,000	0	50-10,000	+ 5
H-2	Mike to grid	TF4RX11YY	82	135,000	50	250-8,000	+18
H-3	Plate to single grid	TF4RX15YY	15,000	60,000	0	50-10,000	+ 6
H-4	Plate to single grid DC in Pri.	TF4RX15YY	15,000	60,000	4	200-10,000	+14
H-5	Plate to PP grids	TF4RX15YY	15,000	95,000 CT	0	50-10,000	+ 5
H-6	Plate to PP grids DC in Pri.	TF4RX15YY	15,000	95,000 split	4	200-10,000	+11
H-7	Plate or PP to line	TF4RX13YY	20,000 CT	150/600	4	200-10,000	+21
H-8	Mixing and matching	TF4RX16YY	150/600	600 CT	0	50-10,000	+ 8
H-9	82/41:1 input to grid	TF4RX10YY	150/600	1 meg.	0	200-3,000 (4 db.)	+10
H-10	10:1 plate to grid	TF4RX15YY	10,000	1 meg.	0	200-3,000 (4 db.)	+10
H-11	Reactor	TF4RX20YY	300 Hys.-0 DC, 50 Hys.-3 Ma. DC, 6,000 Ohms.				
H-12	Mike, line to PP grids	TF4RX10YY	50,200 CT, 500 CT*	50,000 CT	0	50-10,000	+ 5
H-13	Transistor Interstage	TF4RX13YY	10K/2.5K, Split	2K/.5K split	4	100-10,000	+20
H-14	Transistor Interstage	TF4RX13YY	10K/2.5K, Split	4K/1K split	4	100-10,000	+20
H-15	Transistor to line	TF4RX13YY	1,500 CT	500/125 split	8	100-10,000	+20
H-16	Transistor to V.C.	TF4RX13YY	2,000 CT 4,000 CT	8 16	4	100-10,000	+20

COMPACT AUDIO UNITS . . . RC-50 CASE

Type No.	Application	MIL Type	Pri. Imp. Ohms	Sec. Imp. Ohms	Pri. Unbal. DC MA	Response ± 2 db (Cyc.)	Level max. dbm
H-19A	Balanced line to grid 1:14, multiple (75 db) shielding	TF4RX10YY	250 CT 500 CT	50,000 100,000 CT	0	30-20,000	+ 6
H-20	Plate or PP to PP grids	TF4RX15YY	15,000 split	80,000 split	0	30-20,000	+12
H-21	Plate to PP grids DC in Pri.	TF4RX15YY	15,000	80,000 split	8	100-20,000	+23
H-22	Plate to line	TF4RX13YY	15,000	50/200, 125/500**	8	50-20,000	+23
H-23	PP plates to line	TF4RX13YY	30,000 split	50/200, 125/500**	8	30-20,000	+19
H-24	Reactor	TF4RX20YY	450 Hys.-0 DC, 250 Hys.-5 Ma. DC, 6000 ohms 65 Hys.-10 Ma. DC, 1500 ohms				
H-25	Mixing or trans. to line	TF4RX17YY	500 CT	500/125 split	20	40-20,000	+30
H-26	Transistor Interstage	TF4RX13YY	10,000/2,500 (split)	2,000/500 split	8	40-20,000	+30
H-27	Transistor to V.C.	TF4RX17YY	500 CT	16/4 split	20	40-20,000	+30
H-280	Transistor driver	TF4RX17YY	200 CT	400 split	20	40-20,000	+30
H-281	Transistor to V.C.	TF4RX17YY	48 CT	16, 8, 4	750 Bal	40-20,000	5 watts
H-282	Transistor to V.C. RC-62 case, Pg. 37.	TF4RX17YY	20 CT	16, 8, 4	1000 Bal	40-20,000	10 watts
H-290	Chopper transformer Electrostatic & triple magnetic shld.	TF4RX10YY	2,500 e.s. ($\frac{1}{2}$ Pri.)	100K ratio 1:6.4	0	60-400	+ 5
H-291	Chopper transformer higher gain & 20 db better shielding	TF4RX10YY	2,000/500 e.s. ($\frac{1}{2}$ Pri.)	312K ratio 1:25/12.5	0	60-400	+10

SUBMINIATURE AUDIO UNITS . . . SM CASE

Type No.	Application	MIL Type	Pri. Imp. Ohms	Sec. Imp. Ohms	Pri. Unbal. DC MA	Response ± 2 db (Cyc.)	Level max. dbm
H-30	Input to grid	TF4RX10YY	50	62,500	0	150-10,000	+13
H-31	Plate to single grid	TF4RX15YY	10,000	90,000	0	300-10,000	+13
H-32	Single plate to line	TF4RX13YY	10,000***	200	3	300-10,000	+13
H-33	Single plate to low imp.	TF4RX13YY	30,000	50	1	300-10,000	+15
H-35	Reactor	TF4RX-20YY	100 Henries-0 DC, 50 Henries-1 Ma. DC, 4,400 ohms.				
H-36	Transistor Interstage	TF4RX15YY	25,000 (DCR800)	1,000 (DCR110)	.5	300-10,000	+10
H-37A	Transistor output	TF4RX15YY	500CT(DCR50)	50 (DCR5)	3.5	300-10,000	+15
H-38	Transistor Interstage	TF4RX13YY	10,000 CT (DCR600)	1,200 CT	2	300-10,000	+15
H-39	Transistor Interstage	TF4RX13YY	10,000 CT (DCR600)	2,000 CT	2	300-10,000	+15
H-40A	Transistor output	TF4RX17YY	500 CT (DCR26)	600 CT	10	300-10,000	+15
H-41A	Transistor output	TF4RX13YY	1,500 CT (DCR71)	600 CT	7	300-10,000	+15

* 200 ohm termination can be used for 150 ohms or 250 ohms, 500 ohm termination for 600 ohms.

** 200 ohm termination can be used for 150 ohms or 250 ohms, 125/500 ohm termination for 150/600 ohms.

*** Can be used for 500 ohm load . . . 25,000 ohm primary impedance . . . 1.5 Ma. DC.



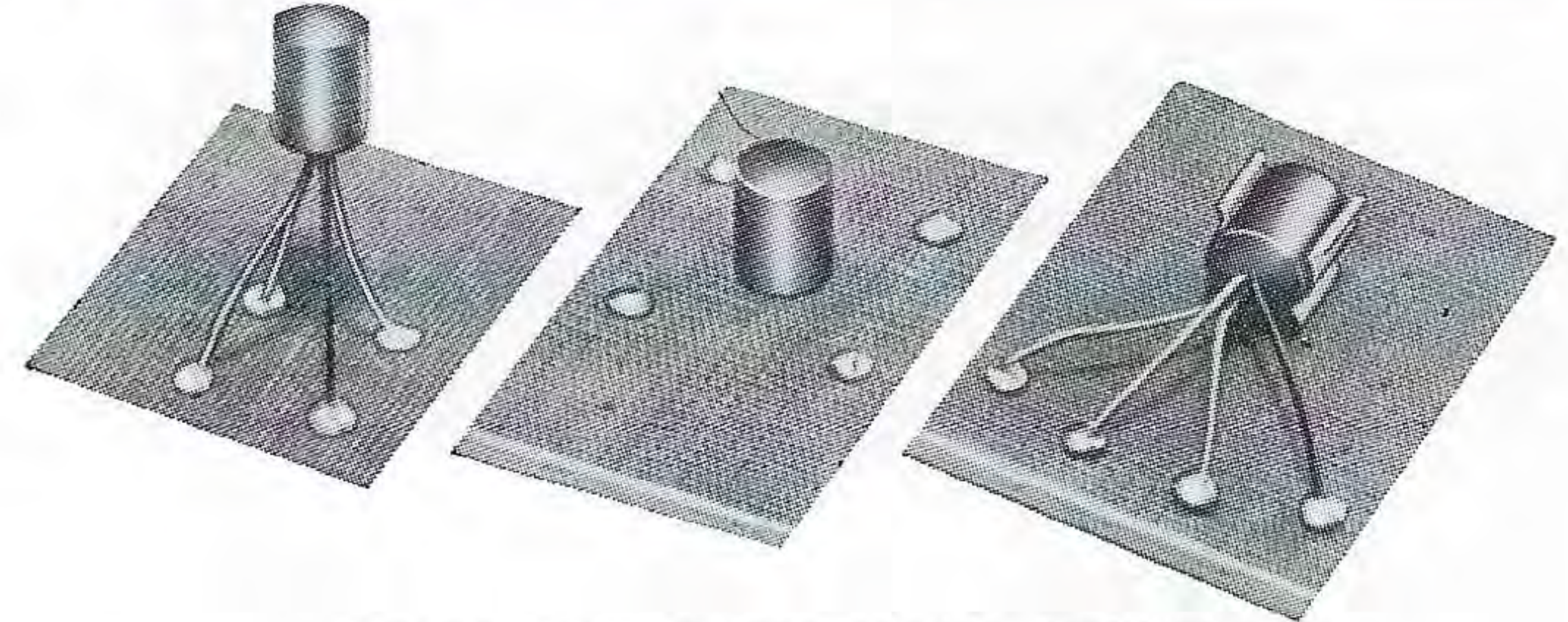
DO-T AND DI-T TRANSFORMERS

Conventional miniaturized transistor transformers have inherently poor electrical characteristics, perform with insufficient reliability and are woefully inadequate for many applications. The radical design of the new UTC DO-T and DI-T transistor transformers provide unprecedented power handling capacity and reliability, coupled with extremely small size.

To fully appreciate DO-T and DI-T transistor transformers, the curves below indicate their performance compared to that of similar size units now on the market. Special units available to your specs. for production applications. Available with leads at both ends on production order. Electrostatic shielding available on production orders.

Units can be used for different impedances than those shown, keeping in mind that impedance ratio is constant. Lower source impedance will improve response and level ratings . . . higher source will reduce them.

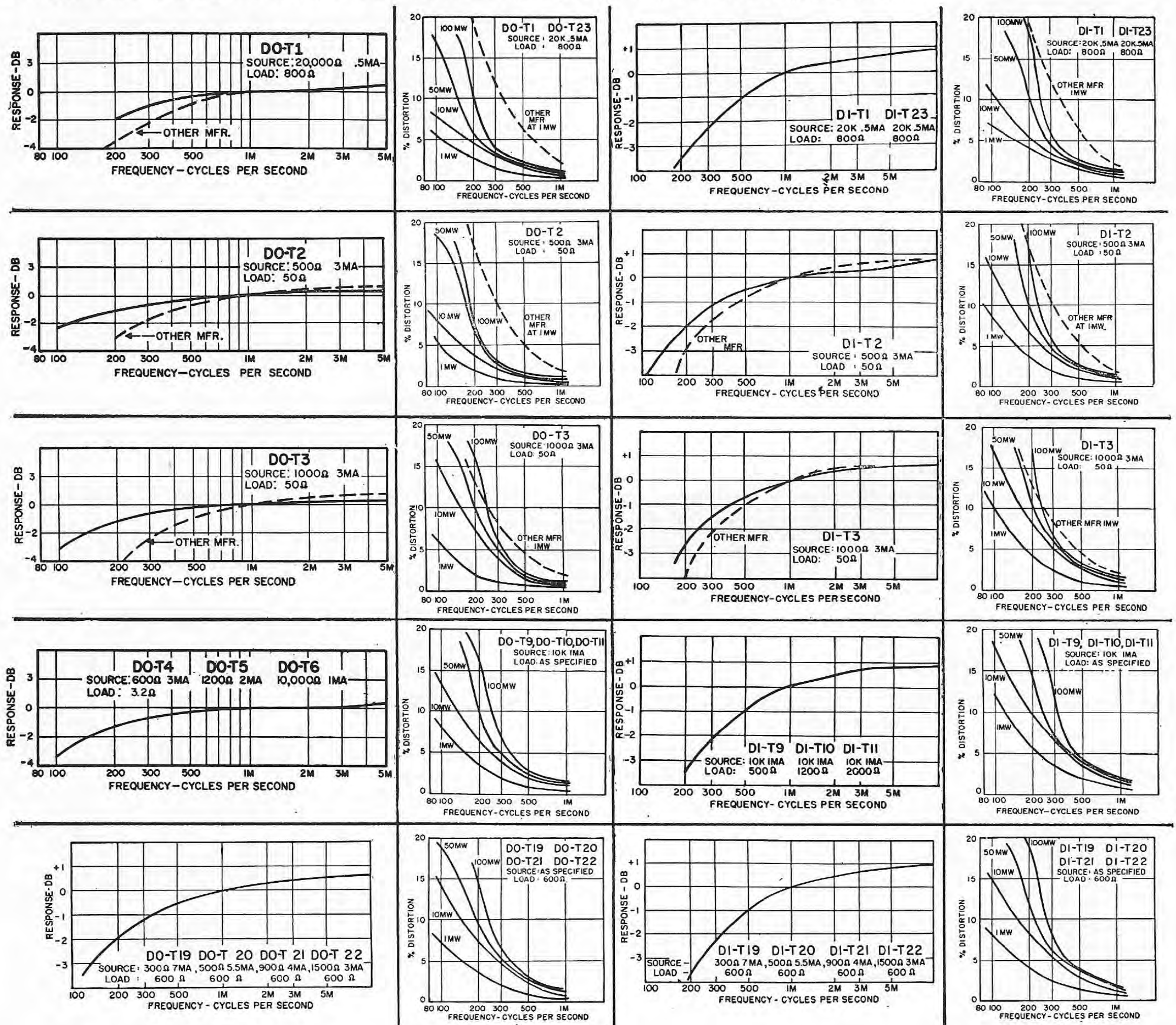
Units may be used reversed, input to secondary.



Typical DO-T Printed Circuit Positioning

TYPICAL DO-T AND DI-T PERFORMANCE CURVES

Power curves based on setting output power at 1 KC, then maintaining same input level over frequency range.





DO-T AND DI-T TRANSFORMERS

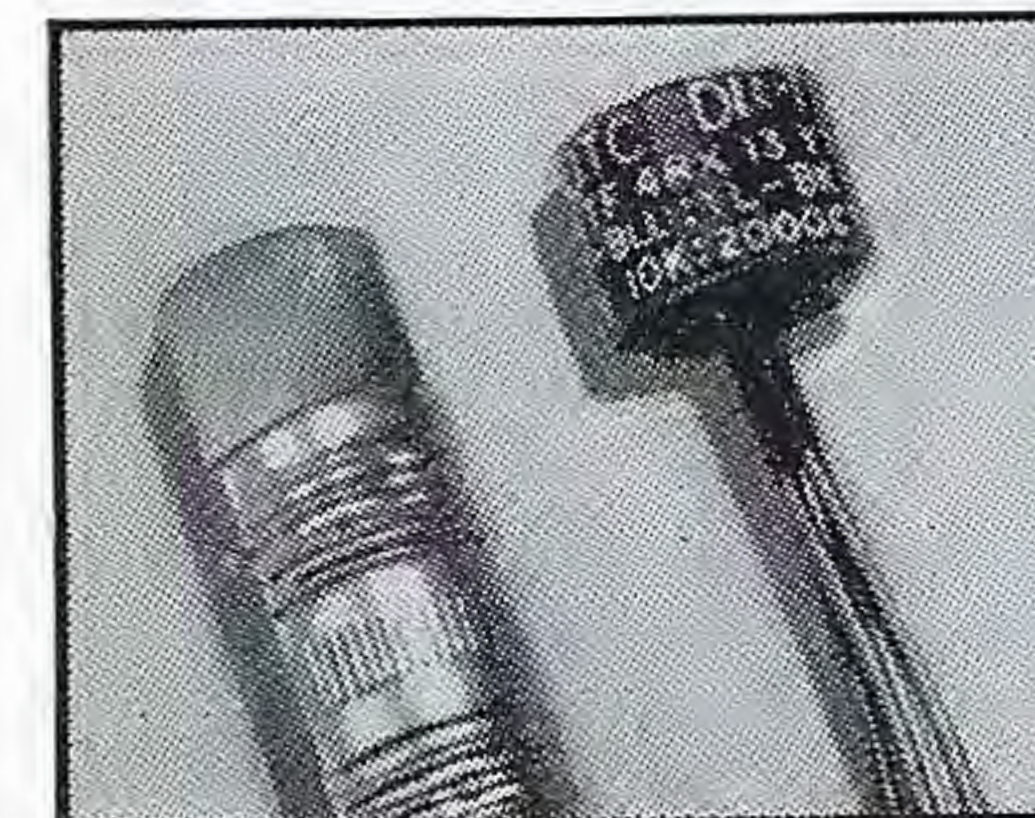
REVOLUTIONARY TRANSISTOR* TRANSFORMERS,
hermetically sealed to MIL-T-27A Specs., see back cover.

ACTUAL SIZE DO-T
5/16 Dia. x 13/32, 1/10 Oz.



- High Power Rating.....up to 100 times greater.
- Excellent Responsetwice as good at low end.
- Low Distortionreduced 80%
- High Efficiencyup to 30% better . . . compare DCR.
- Moisture Proofhermetically sealed to MIL-T-27A.
- Ruggedcompletely metal cased.
- Anchored Leadswill withstand 10 pound pull test.
- Printed Circuit Use(solder melting) plastic insulated leads.
- Suited to Clip Mounting.....use Augat #6009-8A clip.

ACTUAL SIZE DI-T
5/16 Dia. x 1/4, 1/20 Oz.



DO-T No.	MIL Type	Application	Pri. Imp.	D.C. Ma.† in Pri.	Sec. Imp.	Pri. Res. DO-T	Pri. Res. DI-T	Mw. Level	DI-T No.
DO-T1	TF4RX13YY	Interstage	20,000 30,000	.5 .5	800 1200	850	815	50	DI-T1
DO-T2	TF4RX17YY	Output	500 600	3 3	50 60	60	65	100	DI-T2
DO-T3	TF4RX13YY	Output	1000 1200	3 3	50 60	115	110	100	DI-T3
DO-T4	TF4RX17YY	Output	600	3	3.2	60		100	
DO-T5	TF4RX13YY	Output	1200	2	3.2	115	110	100	DI-T5
DO-T6	TF4RX13YY	Output	10,000	1	3.2	790		100	
DO-T7	TF4RX16YY	Input	200,000	0	1000	8500		25	
DO-T8	TF4RX20YY	Reactor 3.5 Hys. @ 2 Ma. DC, 1 Hy. @ 5 Ma. DC				630			
	TF4RX20YY	Reactor 2.5 Hys. @ 2 Ma. DC, .9 Hy. @ 4 Ma. DC					630		DI-T8
DO-T9	TF4RX13YY	Output or driver	10,000 12,000	1 1	500 CT 600 CT	800	870	100	DI-T9
DO-T10	TF4RX13YY	Driver	10,000 12,000	1 1	1200 CT 1500 CT	800	870	100	DI-T10
DO-T11	TF4RX13YY	Driver	10,000 12,000	1 1	2000 CT 2500 CT	800	870	100	DI-T11
DO-T12	TF4RX17YY	Single or PP output	150 CT 200 CT	10 10	12 16	11		500	
DO-T13	TF4RX17YY	Single or PP output	300 CT 400 CT	7 7	12 16	20		500	
DO-T14	TF4RX17YY	Single or PP output	600 CT 800 CT	5 5	12 16	43		500	
DO-T15	TF4RX17YY	Single or PP output	800 CT 1070 CT	4 4	12 16	51		500	
DO-T16	TF4RX13YY	Single or PP output	1000 CT 1330 CT	3.5 3.5	12 16	71		500	
DO-T17	TF4RX13YY	Single or PP output	1500 CT 2000 CT	3 3	12 16	108		500	
DO-T18	TF4RX13YY	Single or PP output	7500 CT 10,000 CT	1 1	12 16	505		500	
DO-T19	TF4RX17YY	Output to line	300 CT	7	600	19	20	500	DI-T19
DO-T20	TF4RX17YY	Output or line to line	500 CT	5.5	600	31	32	500	DI-T20
DO-T21	TF4RX17YY	Output to line	900 CT	4	600	53	53	500	DI-T21
DO-T22	TF4RX13YY	Output to line	1500 CT	3	600	86	87	500	DI-T22
DO-T23	TF4RX13YY	Interstage	20,000 CT 30,000 CT	.5 .5	800 CT 1200 CT	850	815	100	DI-T23
DO-T24	TF4RX16YY	Input (usable for chopper service)	200,000 CT	0	1000 CT	8500		25	
DO-T25	TF4RX13YY	Interstage	10,000 CT 12,000 CT	1 1	1500 CT 1800 CT	800	870	100	DI-T25
DO-T26	TF4RX20YY	Reactor 6 Hys. @ 2 Ma. DC, 1.5 Hys. @ 5 Ma. DC				2100			
	TF4RX20YY	Reactor 4.5 Hys. @ 2 Ma. DC, 1.2 Hys. @ 4 Ma. DC					2300		DI-T26
DO-T27	TF4RX20YY	Reactor 1.25 Hys. @ 2 Ma. DC, .5 Hy. @ 11 Ma. DC				100			
	TF4RX20YY	Reactor .9 Hy. @ 2 Ma. DC, .5 Hy. @ 6 Ma. DC					105		DI-T27
DO-T28	TF4RX20YY	Reactor .3 Hy. @ 4 Ma. DC, .15 Hy. @ 20 Ma. DC				25			
	TF4RX20YY	Reactor .1 Hy. @ 4 Ma. DC, .08 Hy. @ 10 Ma. DC					25		DI-T28
DO-T29	TF4RX17YY	Single or PP output	120 CT 150 CT	10 10	3.2 4	10		500	
DO-T30	TF4RX17YY	Single or PP output	320 CT 400 CT	7 7	3.2 4	20		500	
DO-T31	TF4RX17YY	Single or PP output	640 CT 800 CT	5 5	3.2 4	43		500	
DO-T32	TF4RX17YY	Single or PP output	800 CT 1000 CT	4 4	3.2 4	51		500	
DO-T33	TF4RX13YY	Single or PP output	1060 CT 1330 CT	3.5 3.5	3.2 4	71		500	
DO-T34	TF4RX13YY	Single or PP output	1600 CT 2000 CT	3 3	3.2 4	109		500	
DO-T35	TF4RX13YY	Single or PP output	8000 CT 10,000 CT	1 1	3.2 4	505		500	
DO-T36	TF4RX13YY	Isol. or Interstage	10,000 CT	1	10,000 CT	950	970	500	DI-T36

DO-TSH Drawn Hipermalloy shield and cover for DO-T's, provides 20 to 30 db shielding, for DI-T's, DI-TSH
†DCMA shown is for single ended useage (under 5% distortion—100MW—1KC) . . . for push pull, DCMA can be any balanced value taken by .5W
transistors (under 5% distortion—500MW—1KC)
*DO-T units have been designed for transistor application only . . . not for vacuum tube service. Pats. Pend.



OUNCER AUDIO UNITS / STANDARD AND PLUG-IN TYPES

UTC OUNCER components represent the acme in compact quality transformers. These units, which weigh one ounce, are fully impregnated and sealed in a drawn aluminum housing $\frac{7}{8}$ " diameter . . . mounting opposite terminal board. Hermetic Ouncer (RC-25 case) listed on page 26.

Ouncer items are ideal for portable broadcast, hearing aid, aircraft, concealed service, and similar applications. High fidelity characteristics are provided, uniform within approximately 1 db from 30 to 20,000 cycles, except for 0-14, 0-15 and units carrying DC

which are intended for voice frequencies. Transistor transformers are good to 80 cycles at low end. Maximum level +8 dbm.

"P" series units are identical to the UTC OUNCER units but are sealed in bakelite housings with plug-in base to fit standard octal socket. While of submersion proof design, these units weigh but two ounces. Oversize pins in the base make it impossible to dislodge these units from their sockets.

See page 22 for use of Ouncers with Printed Circuits. Hermetic Ouncers are listed on page 26.



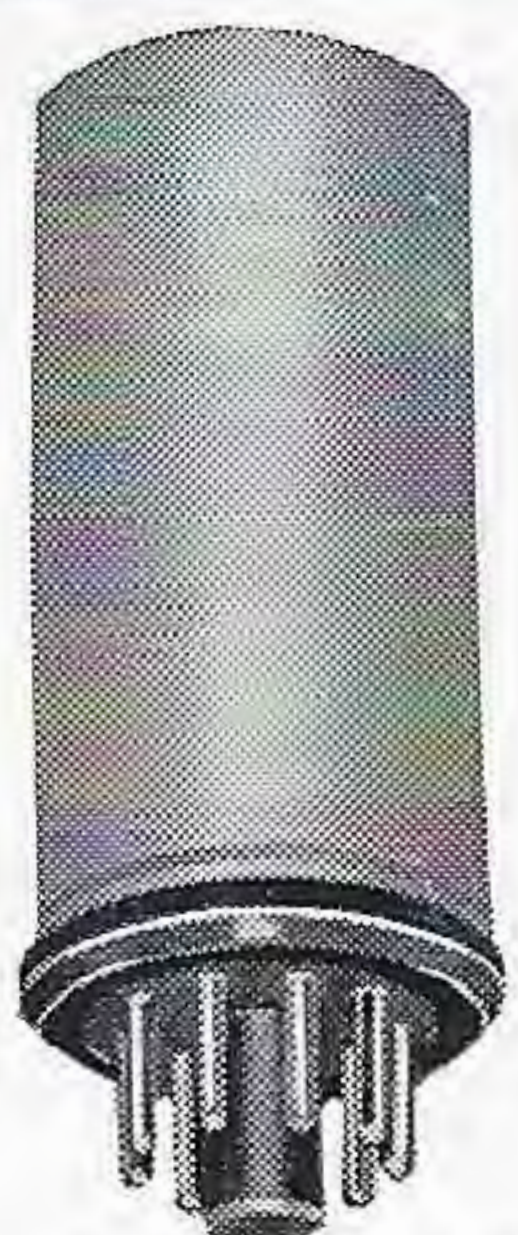
OUNCER CASE

Dia. $\frac{7}{8}$ "
Ht. $1\frac{1}{16}$ "
Mtg. $\frac{1}{16}$ "
Scr. 2-56
Wt. 1 oz.



PLUG-IN CASE

Dia. $1\frac{1}{32}$ "
Ht. $1\frac{15}{32}$ "
Skt. St. Oct.
Wt. 2 oz.



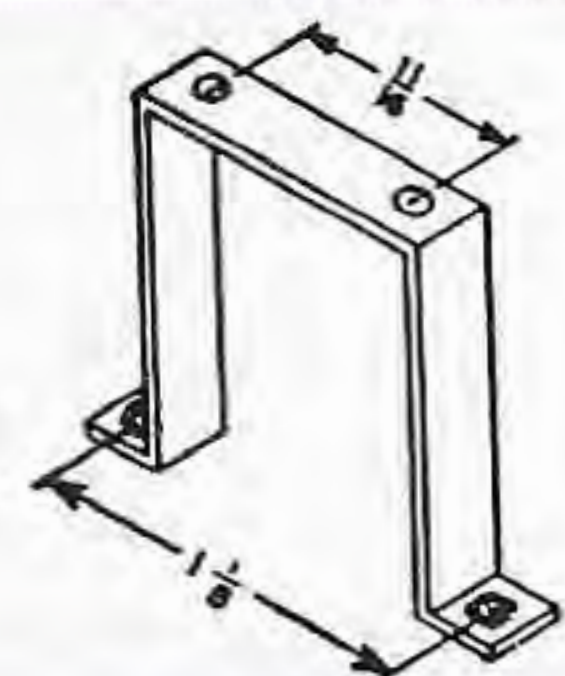
P-16 CASE

Dia. $1\frac{1}{16}$ "
Ht. $2\frac{3}{4}$ "
Wt. 4 oz.



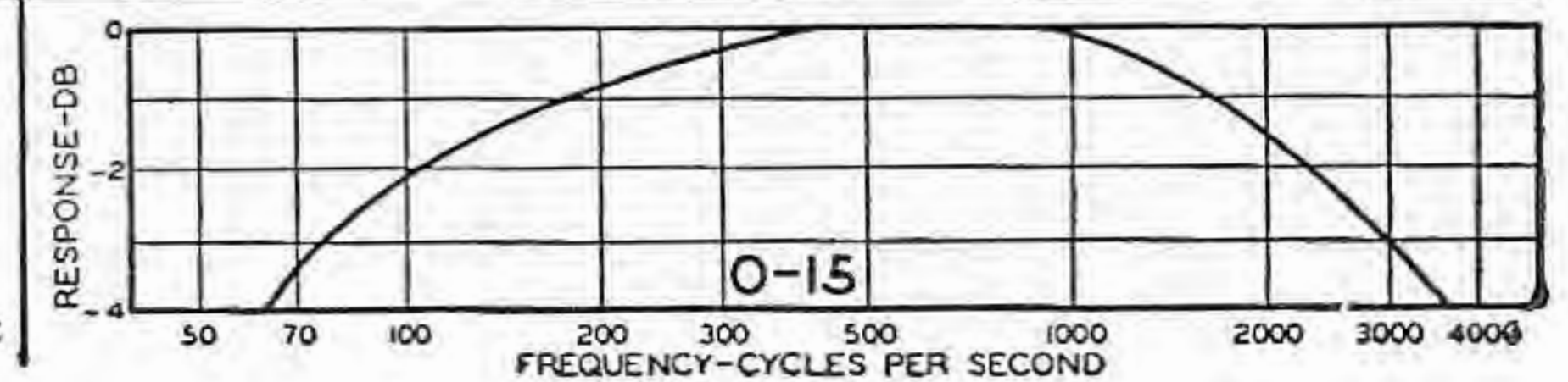
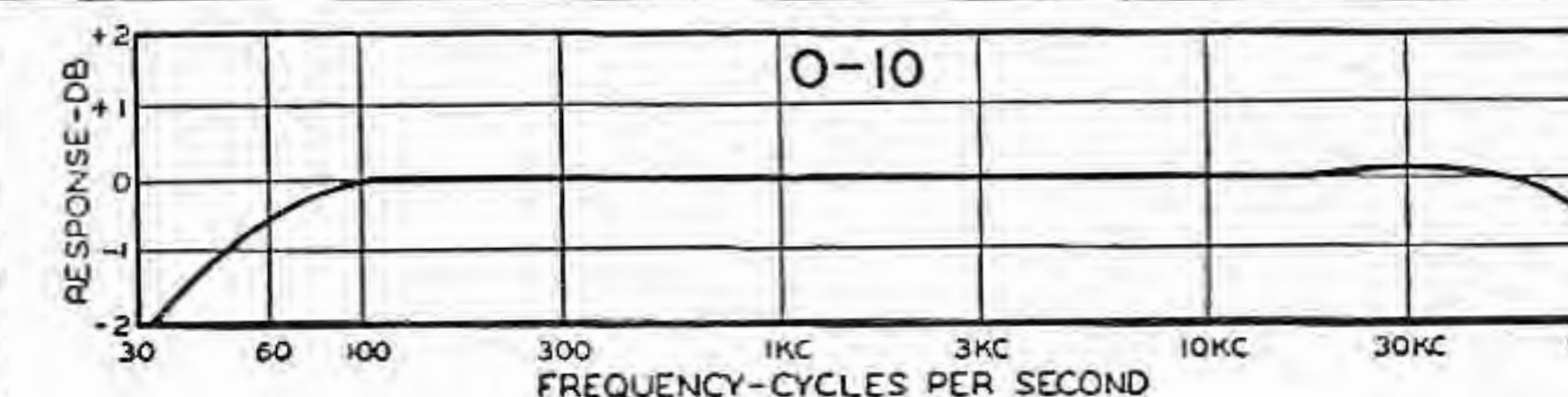
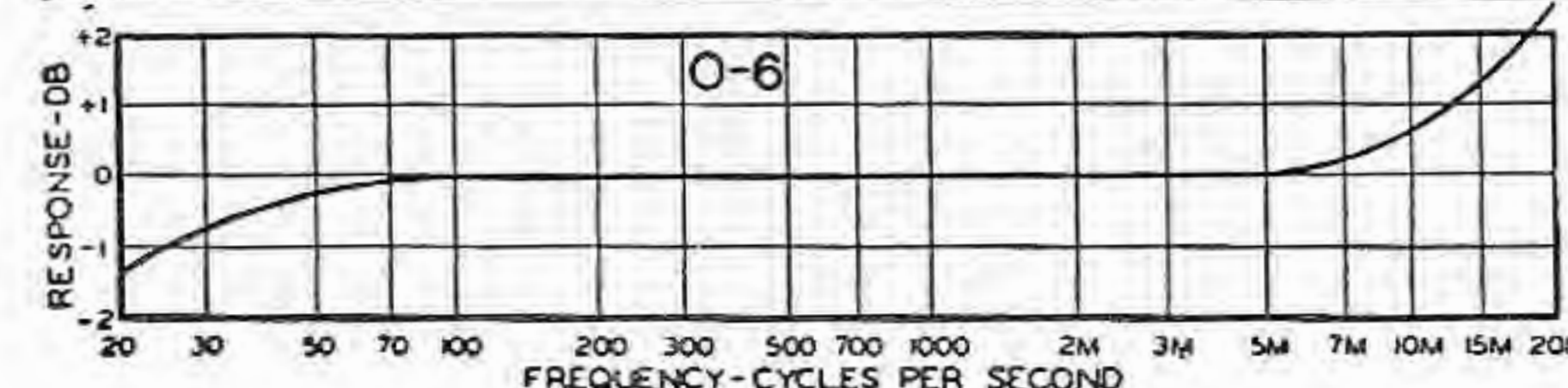
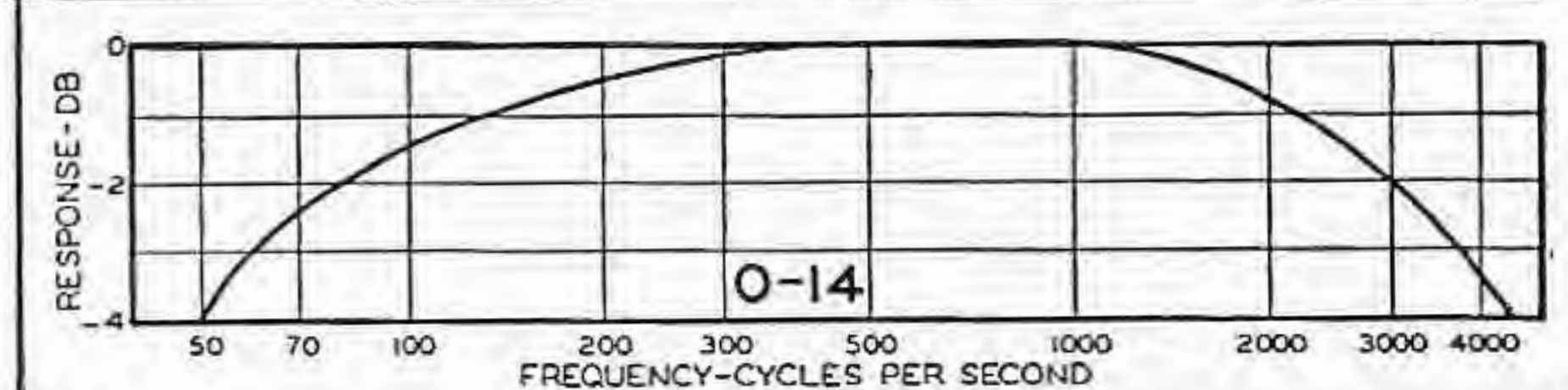
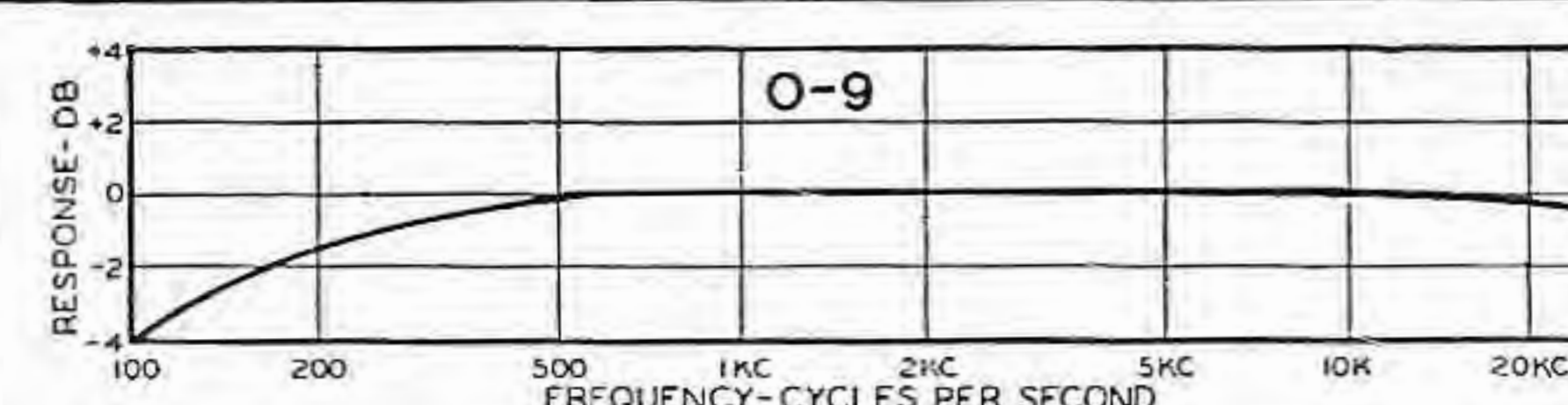
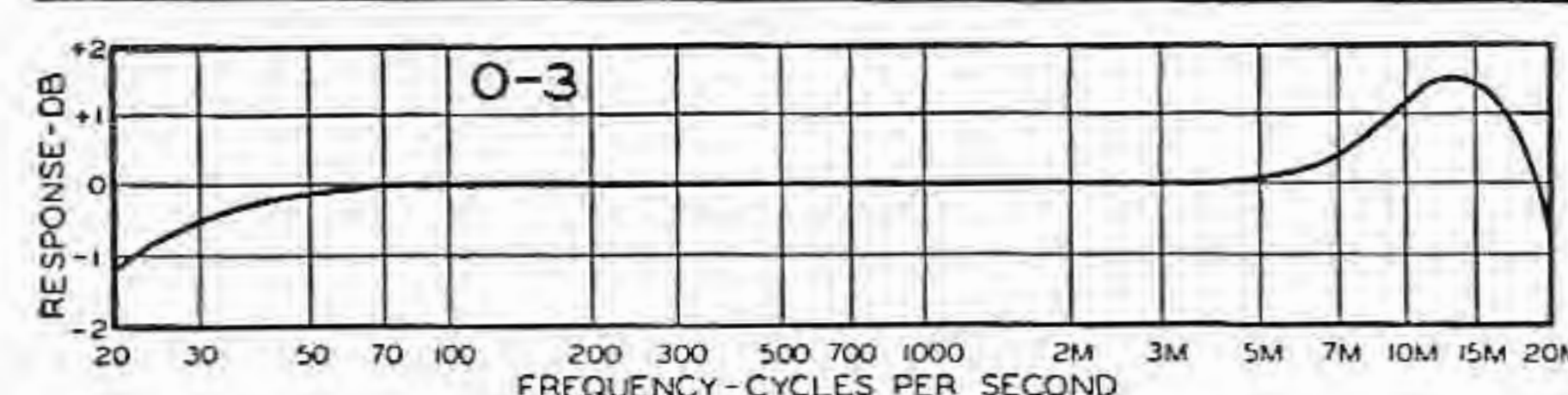
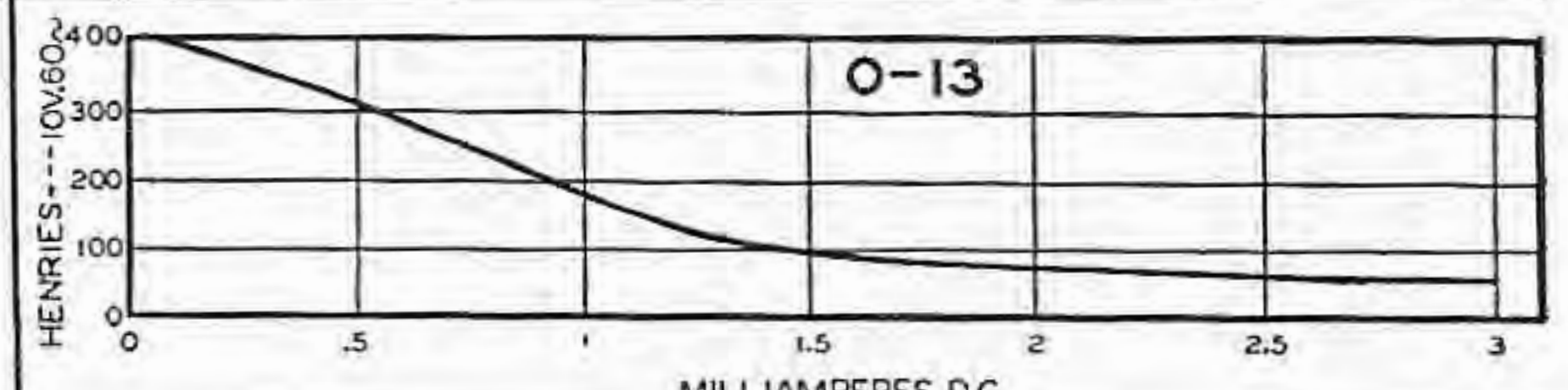
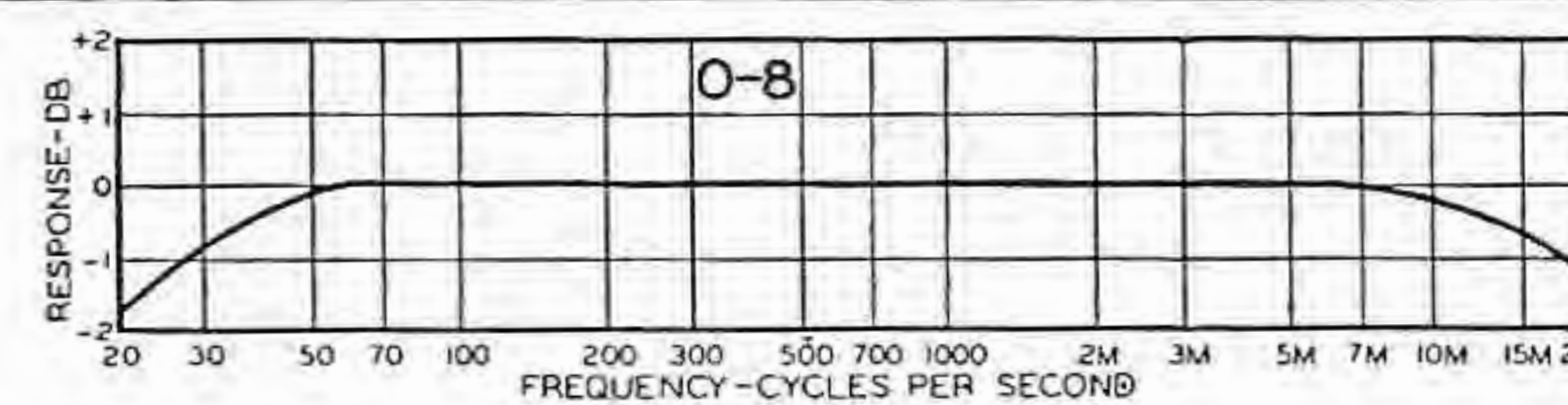
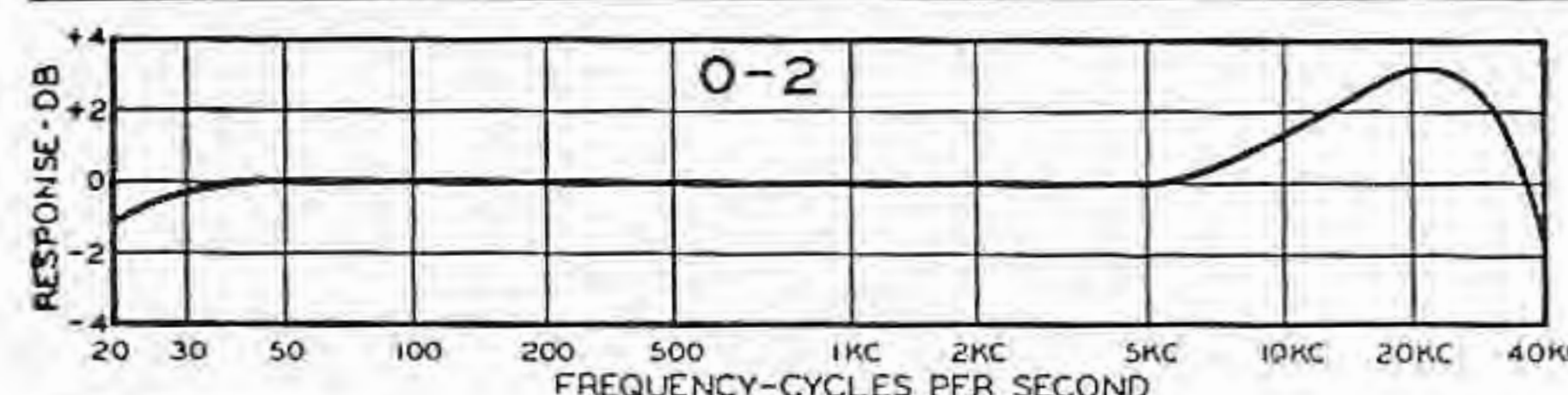
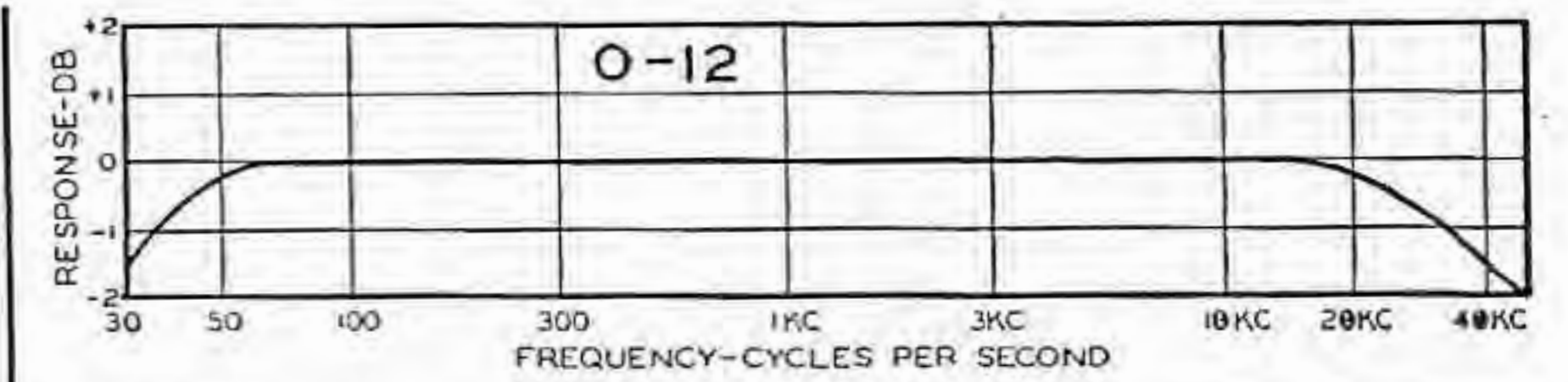
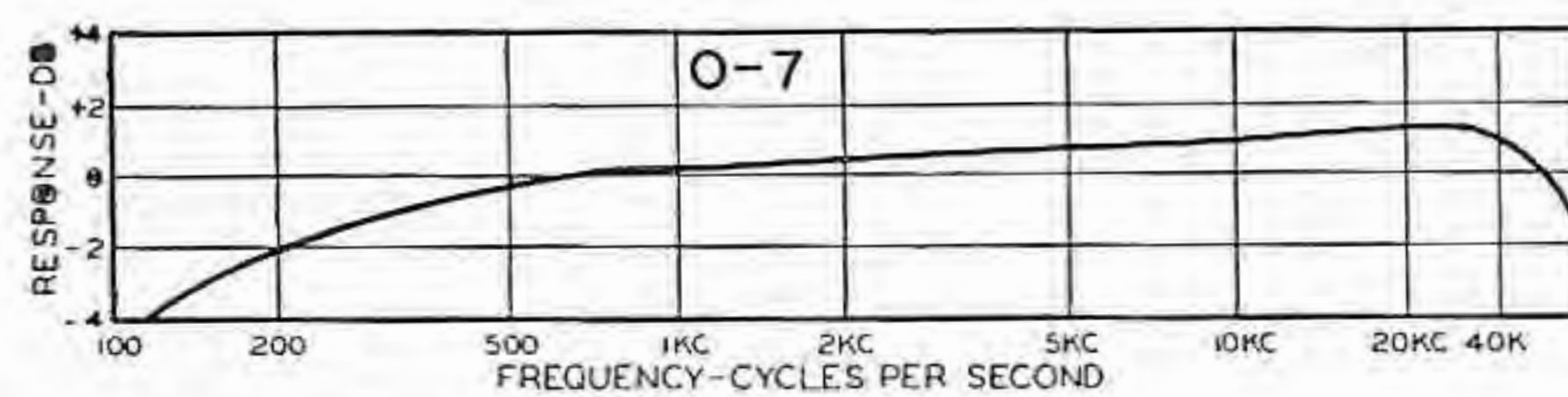
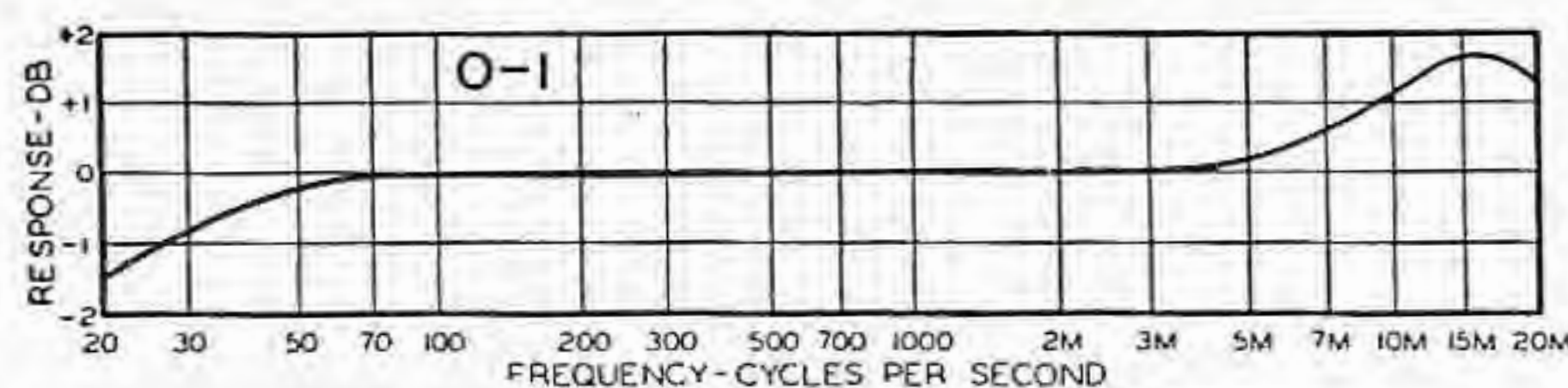
0-16 CASE

Dia. $1\frac{1}{16}$ "
Ht. $1\frac{1}{2}$ "
Mtg. $1\frac{1}{2}$ "
Scr. 6-32
Wt. 3 oz.
Clamp.... $1\frac{1}{16}$ x $1\frac{1}{8}$ "



Ouncer chassis
mount bracket
available on
production
orders

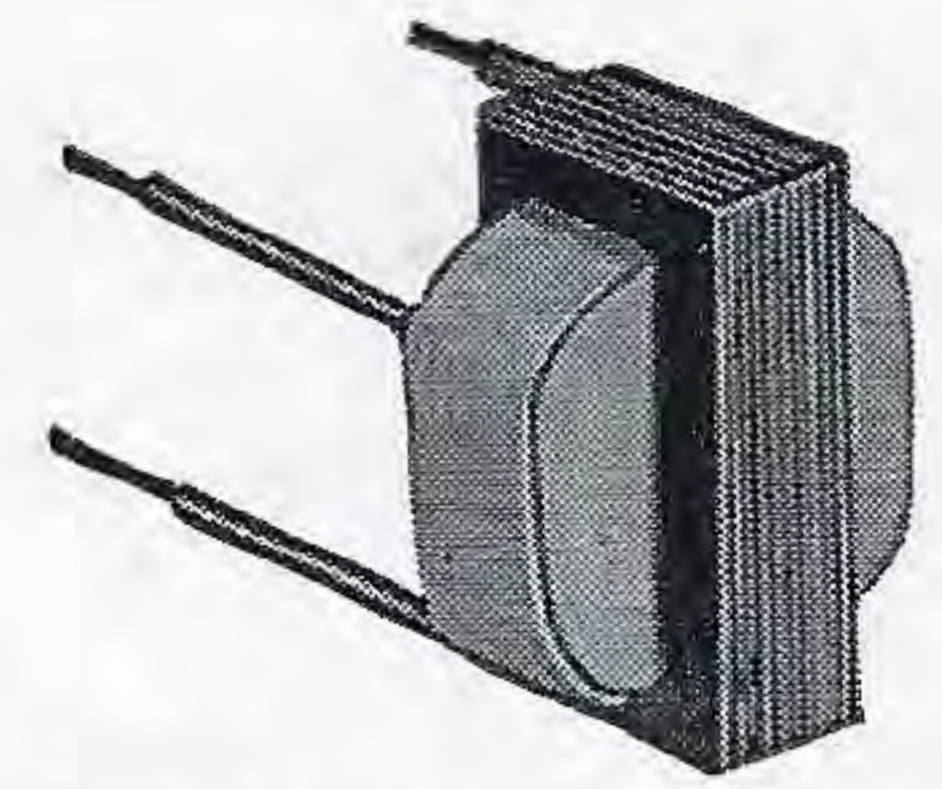
OUNCER Type No.	Application	Pri. Imp.	Sec. Imp.	PLUG-IN Type No.
0-1	Mike, pickup or line to 1 grid	50, 200/250, 500/600	50,000	P-1
0-2	Mike, pickup or line to 2 grids	50, 200/250, 500/600	50,000 CT	P-2
0-3	Dynamic mike to 1 grid	7.5/30	50,000	P-3
0-4	Single plate to 1 grid	15,000	60,000	
0-5	Single plate to 1 grid, D.C. in Pri.	15,000	60,000	
0-6	Single plate to 2 grids	15,000	95,000 CT	P-6
0-7	Single plate to 2 grids, D.C. in Pri.	15,000	95,000 CT	P-7
0-8	Single plate to line	15,000	50, 200/250, 500/600	P-8
0-9	Single plate to line, D.C. in Pri.	15,000	50, 200/250, 500/600	P-9
0-10	Push pull plates to line	30,000 ohms plate to plate	50, 200/250, 500/600	P-10
0-11	Crystal mike or pick-up to line	50,000	50, 200/250, 500/600	P-11
0-12	Mixing and matching	50, 200/250	50, 200/250, 500/600	P-12
0-13	Reactor, 300 Hys.—no D.C.; 50 Hys.—3 Ma. D.C., 6000 ohms			
0-14	50:1 mike or line to 1 grid	200	$\frac{1}{2}$ megohm	
0-15	10:1 single plate to 1 grid	15,000	1 megohm	P-15
0-16	Mike or line to grid	250 C.T.	50,000	
This transformer provides very low hum pickup . . . employs two heavy gauge hipermalloy shields plus orientable mounting. Primary centertap is balanced to 1%. Can be used for 150, 200, 250, 500, or 600 ohm sources . . . 200:1 impedance ratio.				
Same as 0-16 but with nine pin plug in socket. $1\frac{1}{16}$ Dia. x $2\frac{3}{4}$ high, 4 oz.				P-16
0-17	Hipermalloy shield, slip fit over ouncer, 1" O.D., provides 25 db shielding.			
0-18	Transistor Interstage	10,000/2,500 (split)	2,000/500 (split)	
0-19	Transistor Interstage	10,000/2,500 (split)	4,000/1,000 (split)	
0-20	Transistor to line	1,500 CT	500/125 (split)	
0-21	Transistor to voice coil	2,000 CT	8	
0-22	Transistor to Voice Coil	Imp. ratio 250:1	4,000 CT	16
		1W. @ 200 cyc.; $\frac{1}{4}$ W. @ 100 cyc.	500 CT	4
0-22			400 CT	3.2
0-23	Reactor, 7 Hys. @ 3 Ma. DC; 3.5 Hys. @ 10 Ma. DC, 230 ohms			
0-24	Reactor, 1.6 Hys. @ 3 Ma. DC; 8 Hys. @ 10 Ma. DC, 25 ohms			





SUB-SUBOUNCER UNITS

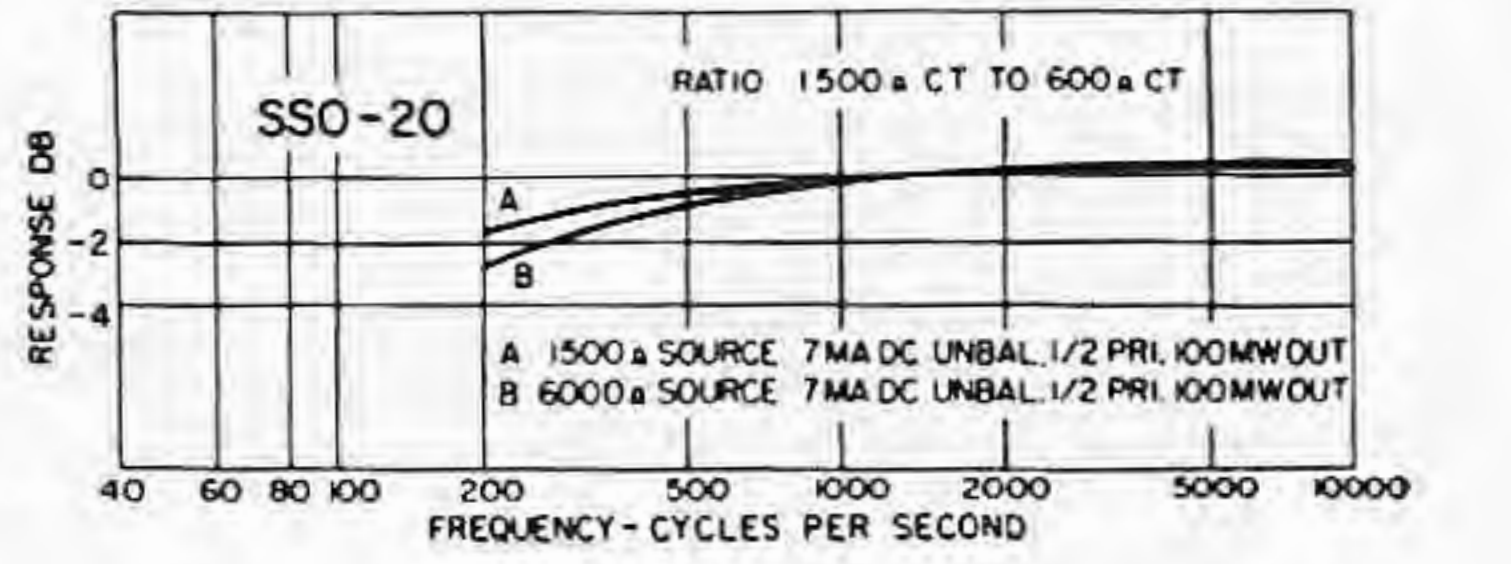
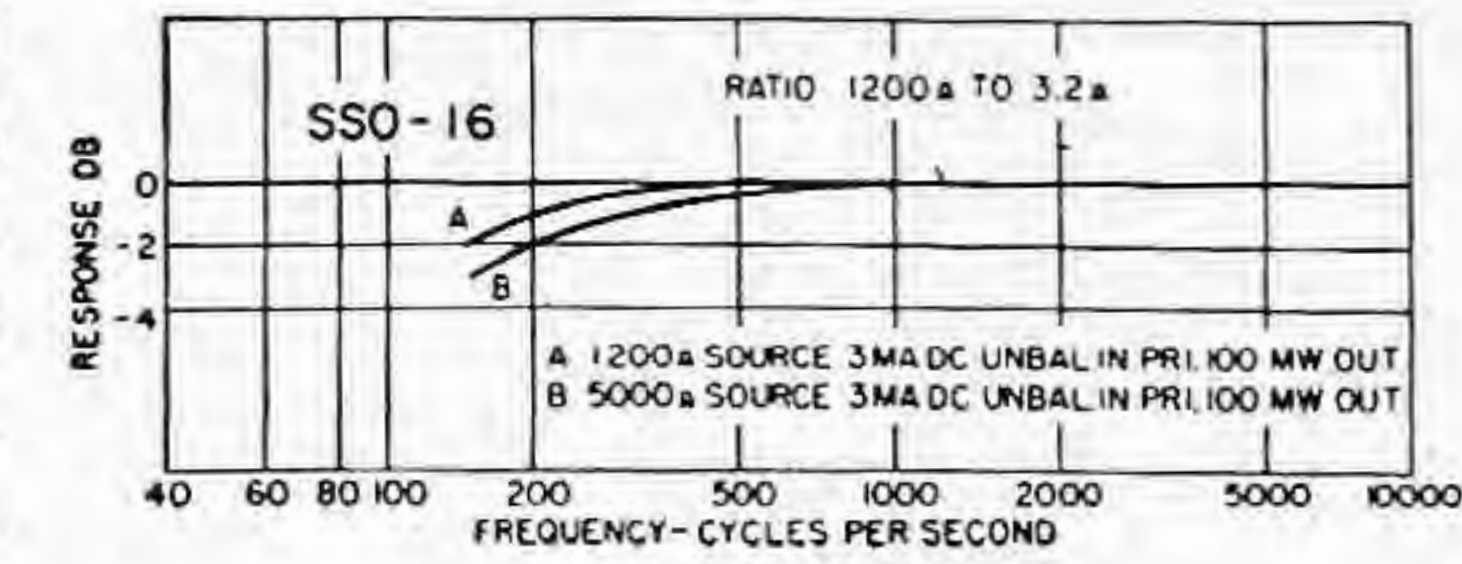
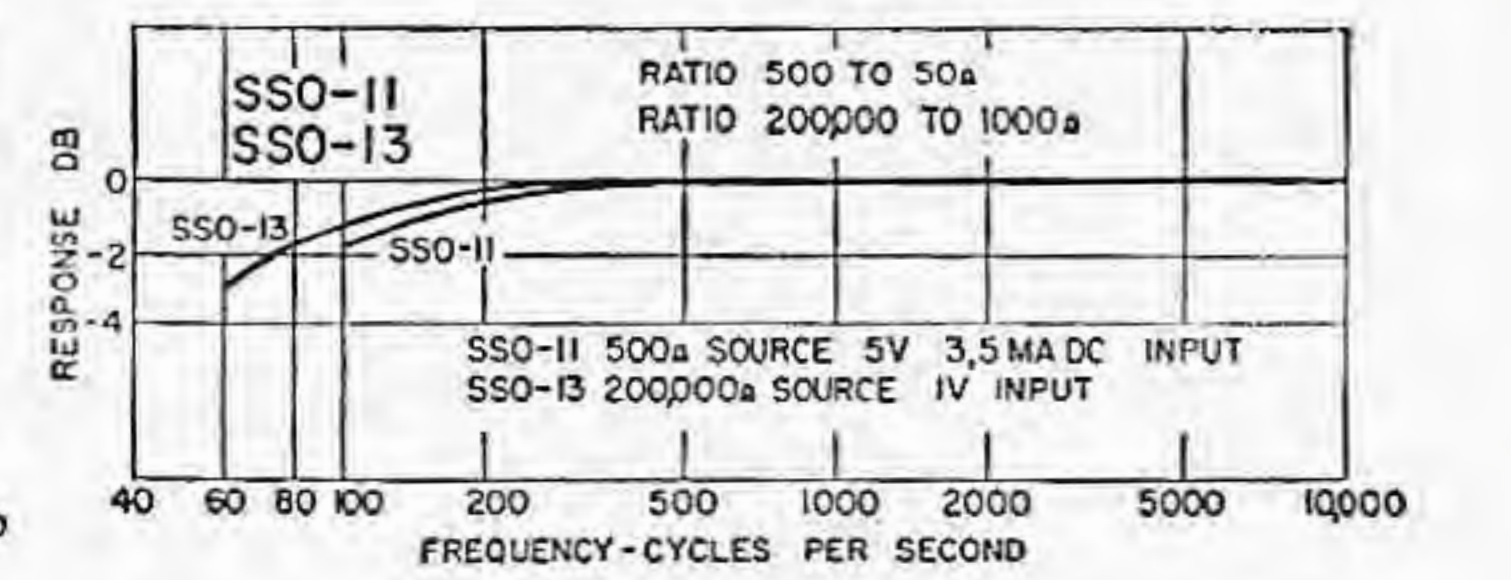
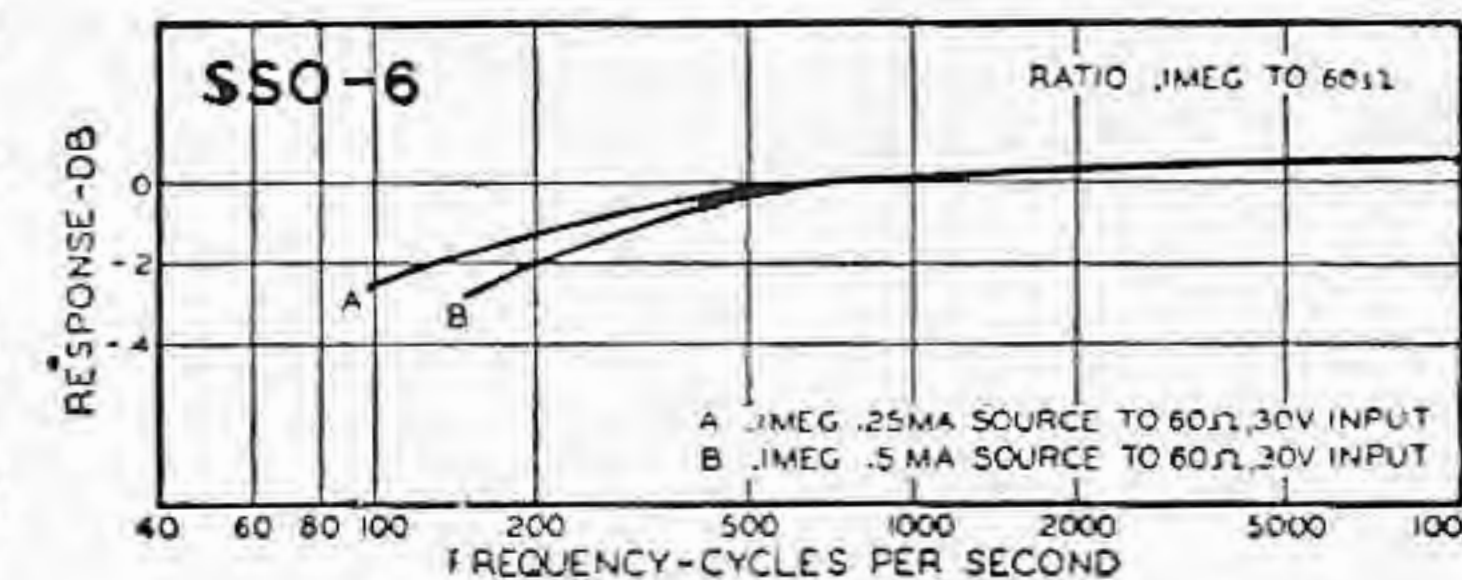
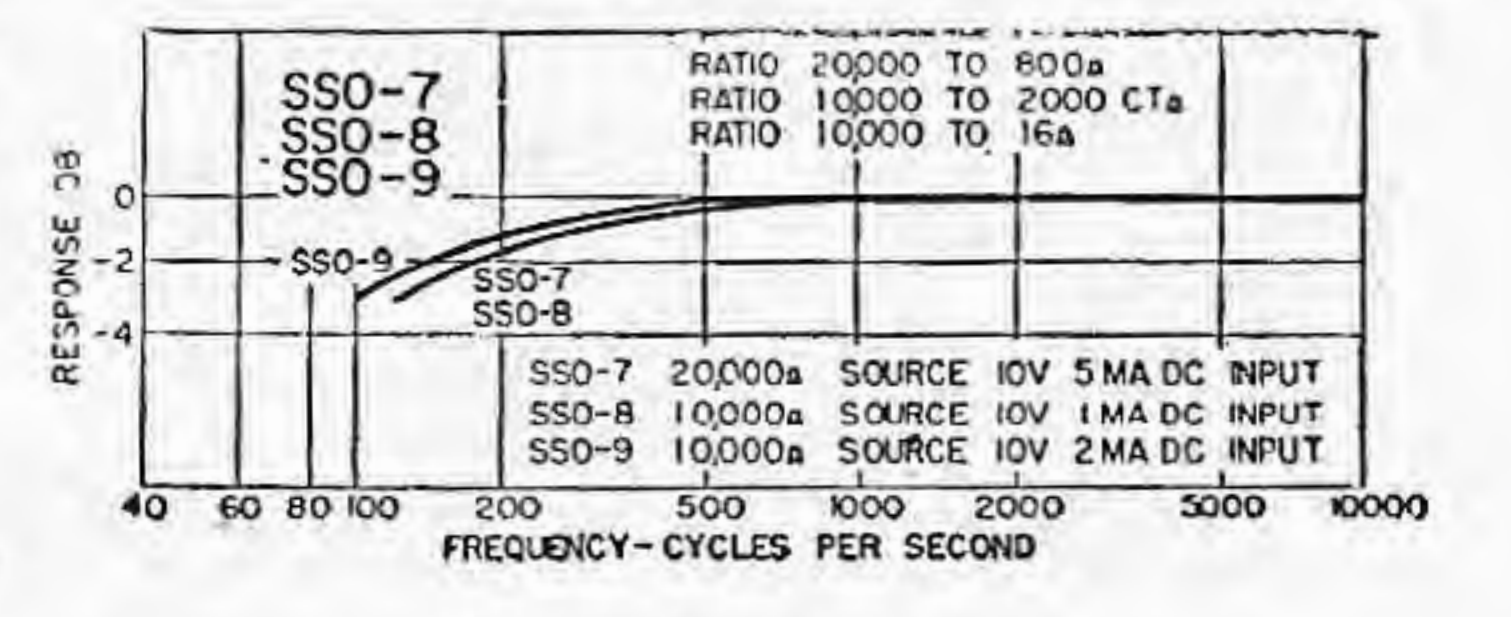
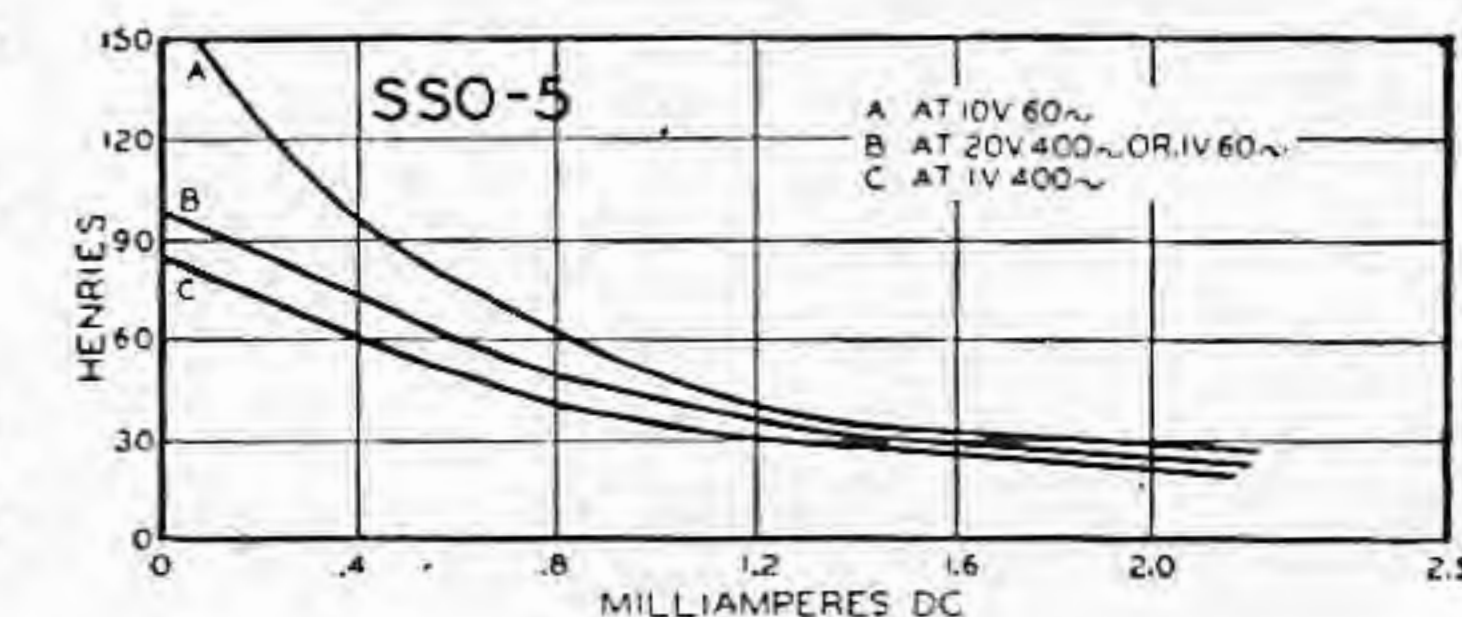
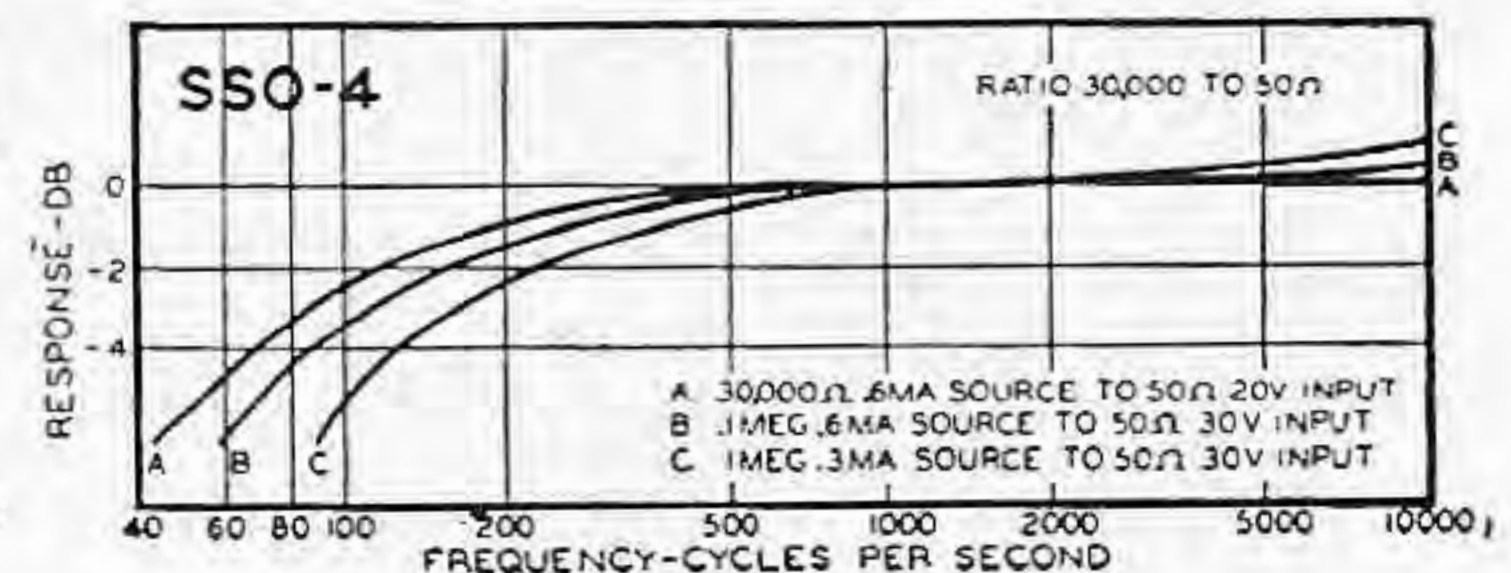
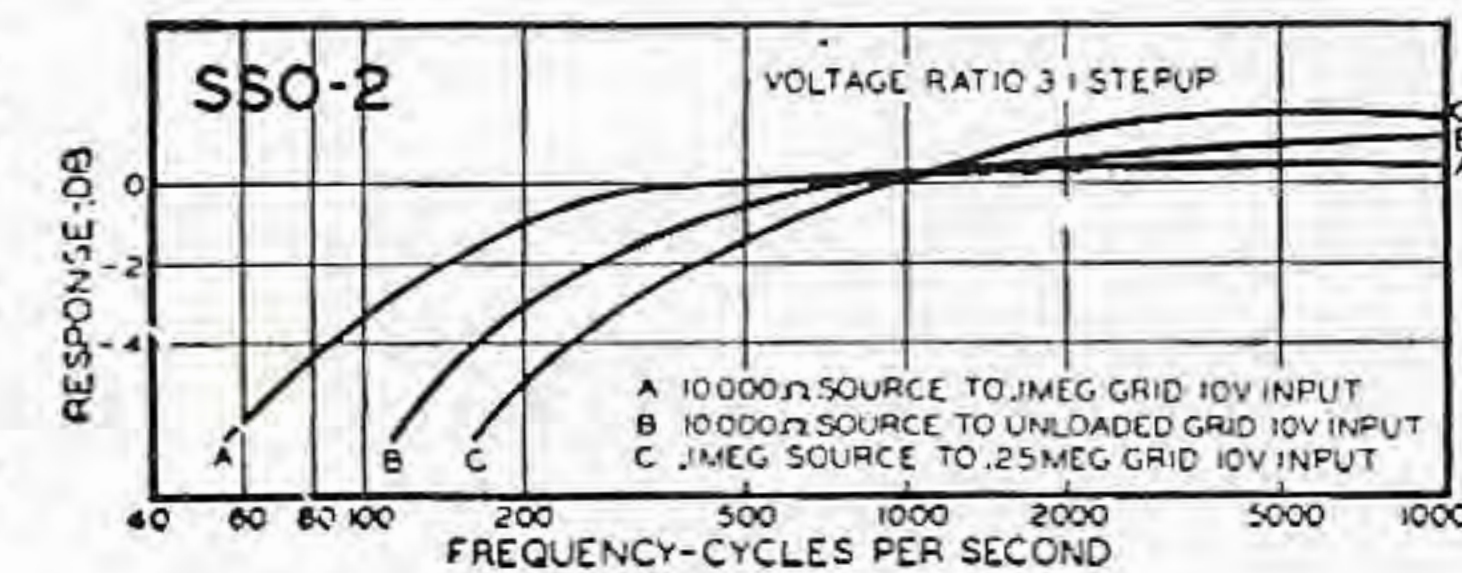
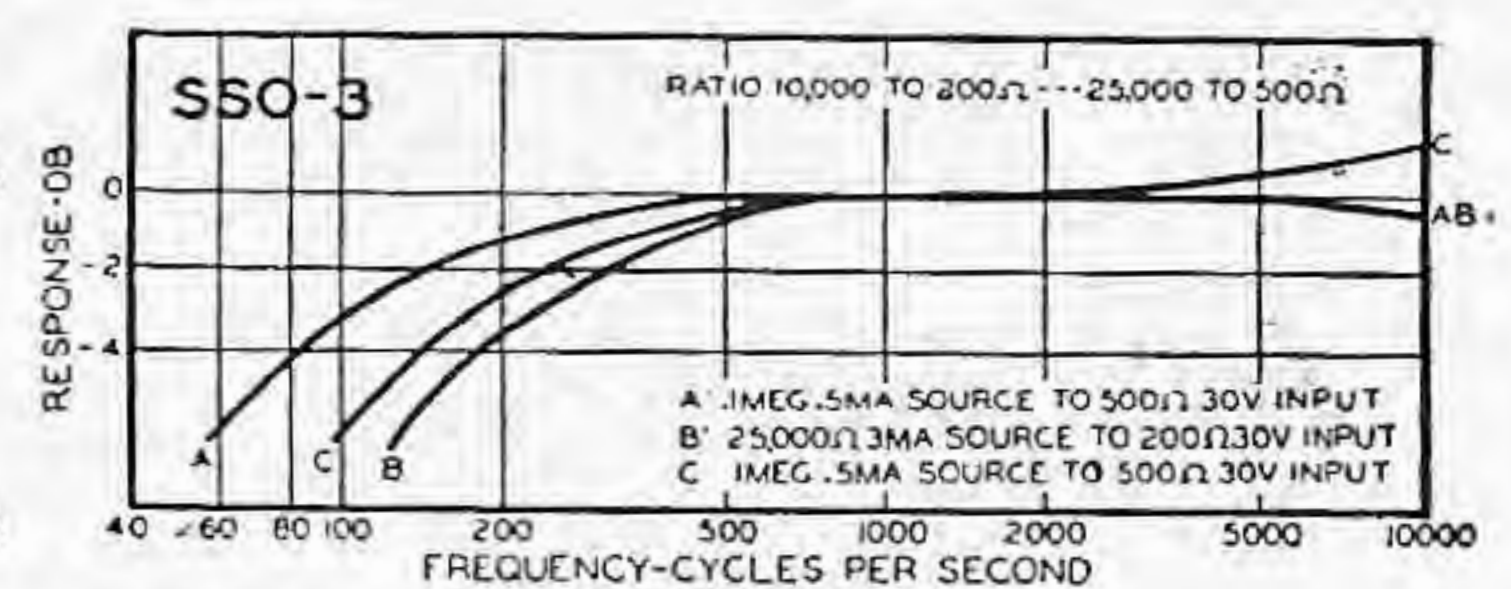
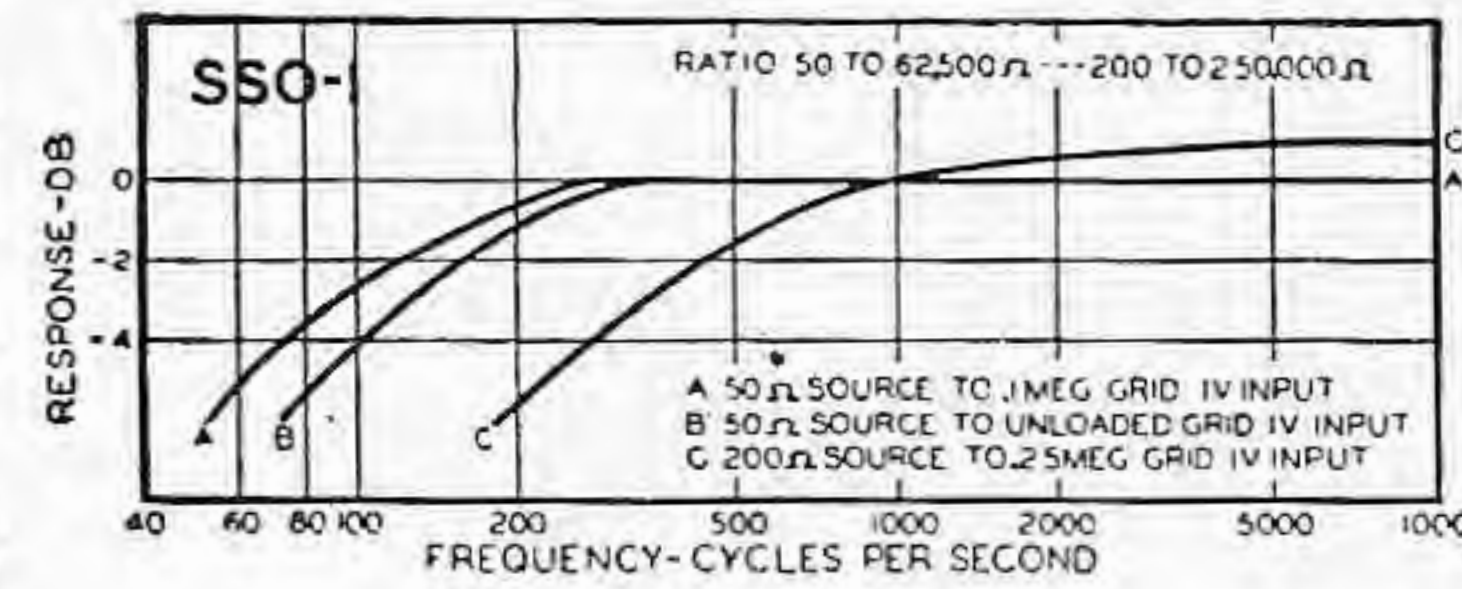
UTC Sub-subouncer units are ideal for ultra-miniaturized components having high efficiency and dependability characteristics. The coils employ automatic layer windings of double Formex wire . . . in a molded Nylon bobbin. All insulation is of cellulose acetate. Four inch color coded flexible leads are employed, securely anchored mechanically. No mounting facilities are provided, since this would preclude maximum flexibility in location, (but channel with mounting centers is available on production orders). Units are vacuum processed and double (water proof) sealed. The curves below indicate the excellent frequency response. Hermetic SSO units (SM case) listed on page 26.



SUB-SUBOUNCER UNIT
Dimensions $\frac{7}{16} \times \frac{3}{4} \times \frac{43}{64}$ "
Weight02 lb.

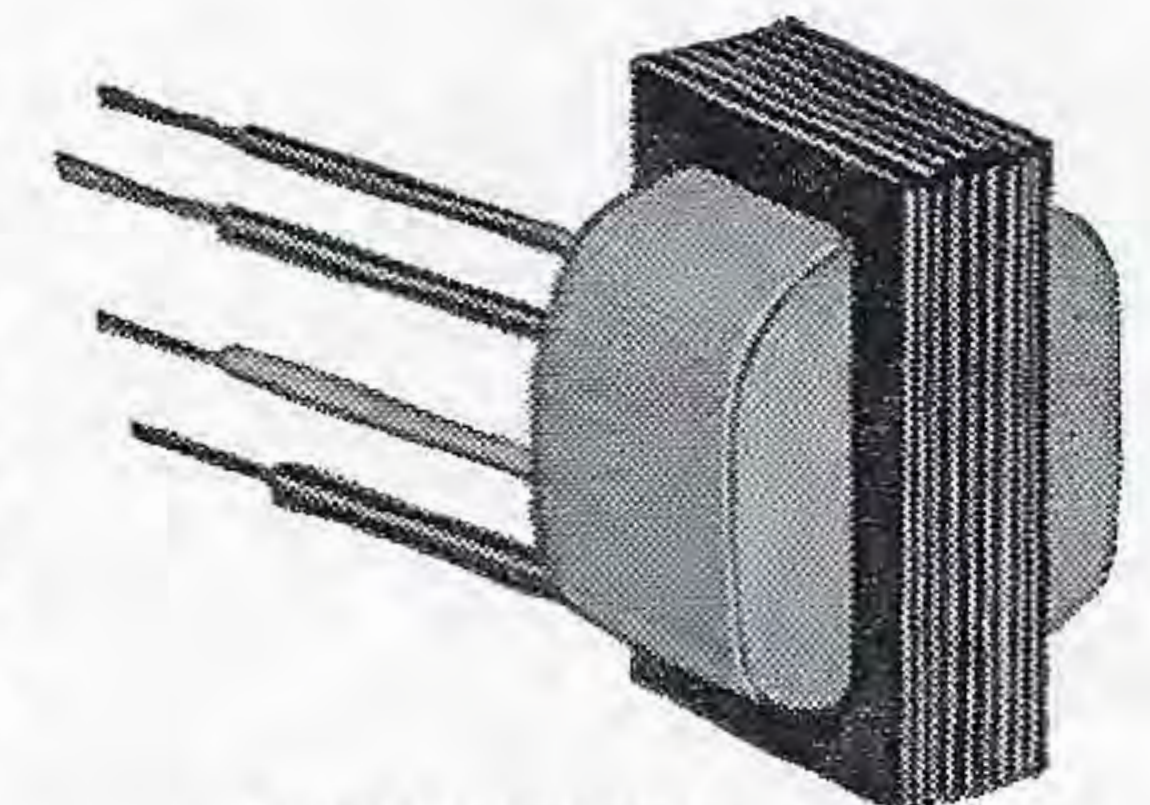
Type	Application	Max. Level dbm	Pri. Imp. ohms	Unbal. MA D.C. in Pri.	Sec. Imp. ohms	Pri. Res. ohms	Sec. Res. ohms
*SSO-1	Input	+7	200 50	0	250 K 62.5 K	13.5	3600
SSO-2	Interstage/3:1	+15	10K	0-25	90 K	710	3150
*SSO-3	Plate to Line	+20	10K 25K	3 1.5	200 500	2500	34
SSO-4	Output	+20	30K	1.0	50	2875	4.6
SSO-5	Reactor 50 HY at 1 mil. D.C.				4400 ohms D.C. Res.		
SSO-6	Output	+20	100K	.5	60	3500	3.3
*SSO-7	Transistor Interstage	+20	20K 30K	.5 .5	800 1200	800	110
SSO-8	Transistor to PP Sec.	+20	10K	1	2000 CT	1200	45
SSO-9	Transistor to V.C.	+20	10K	2	16	800	2.7
SSO-10	Transistor to V.C.	+20	10K	2	3.2	800	.65
*SSO-11	Transistor Output	+20	500 600	3.5 3.5	50 60	50	5
*SSO-12	Transistor Output	+20	1000 1200	3 3	50 60	90	5
SSO-13	Crystal to Transistor	+7	200K	0	1000	4000	190
*SSO-14	Transistor Interstage	+20	10K CT 25K CT	2 1	200 CT 500 CT	650	22
*SSO-15	Transistor Interstage	+20	20K CT 30K CT	1 1	800 CT 1200 CT	800	110
SSO-16	Output	+20	1200 1500	3 3	3.2 4	70	.45
SSO-17	Output or driver	+20	10K 12.5K	2 2	500 CT 600 CT	800	95
SSO-18	Single or P.P. Output	+20	7.5K CT 9.4K CT	4 4	3.2 4	770	.73
SSO-19	Output matching	+20	500 CT	10	600 CT	26	70
SSO-20	Output	+20	1.5K CT	7	600 CT	70	65
SSO-21	Crystal/Chopper	+7	200K CT	0	1000 CT	4000	200
SSO-22	Interstage	+20	10K CT 12K CT	4 4	1500 CT 1800 CT	800	300

SSO-23 Reactor 8 Hys. @ 2 MA D.C., 4 Hys. @ 5 MA D.C. 650 ohms
SSO-24 Reactor 3.5 Hys. @ 2 MA D.C., 1.5 Hys @ 5 MA D.C. 160 ohms
*Impedance ratio is fixed, 1250:1 for SSO-1, etc. Any impedance between the values shown may be employed.

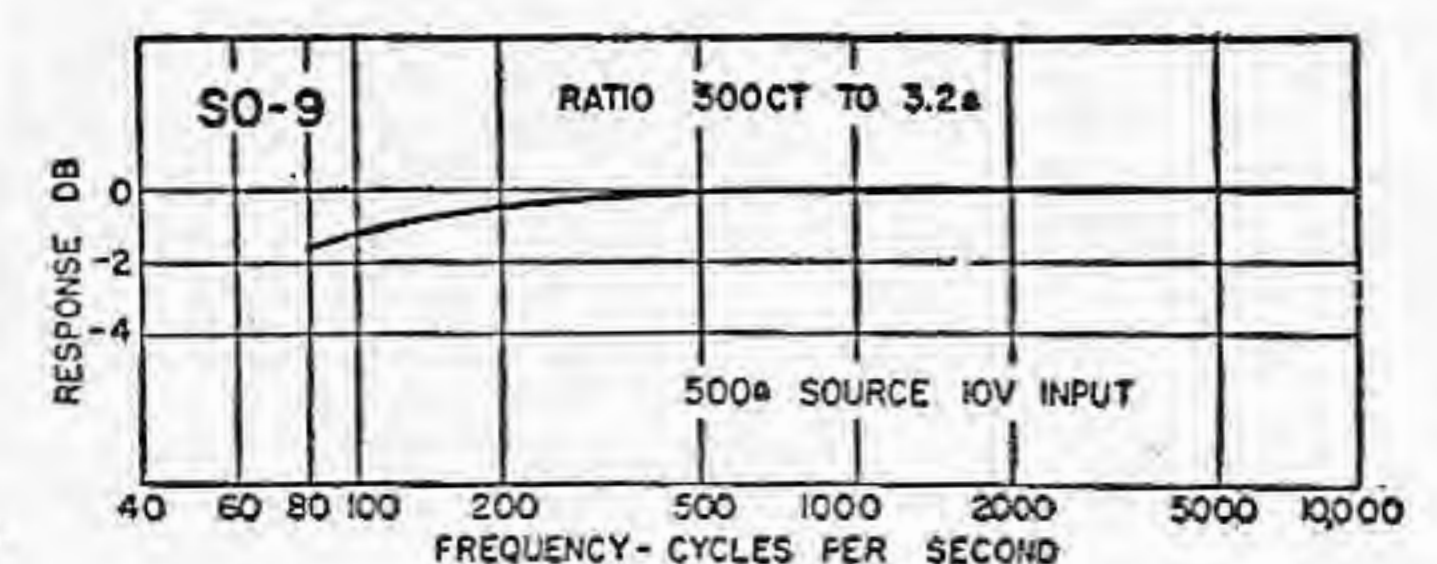
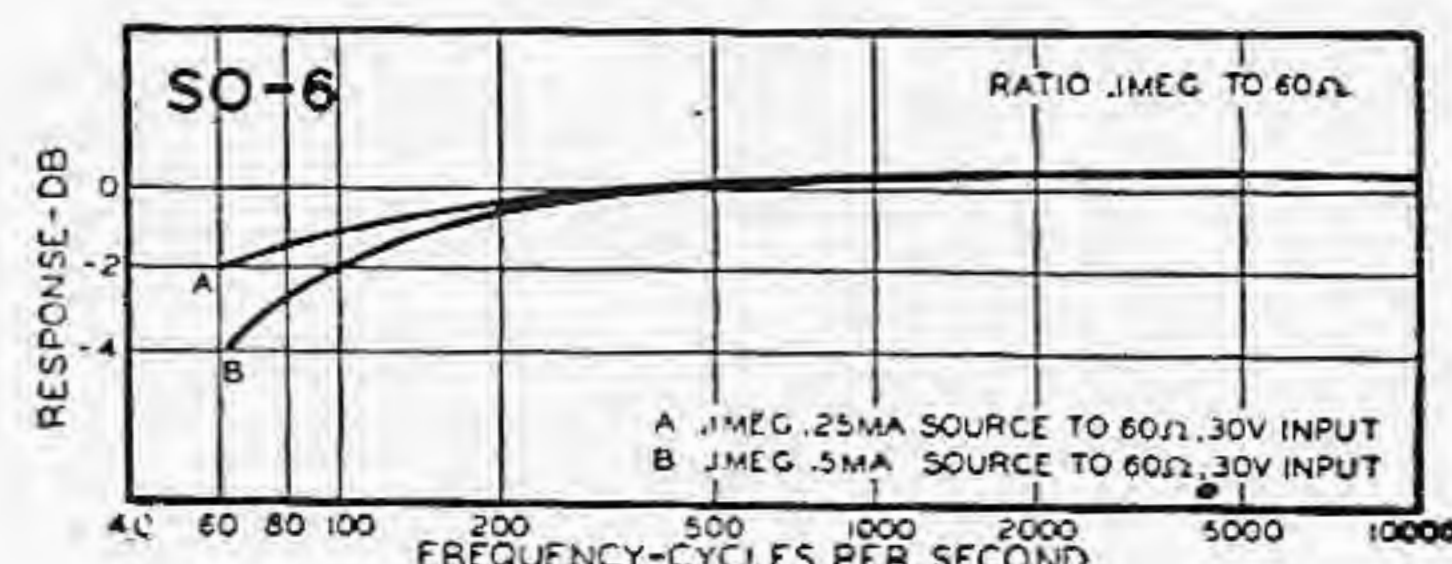
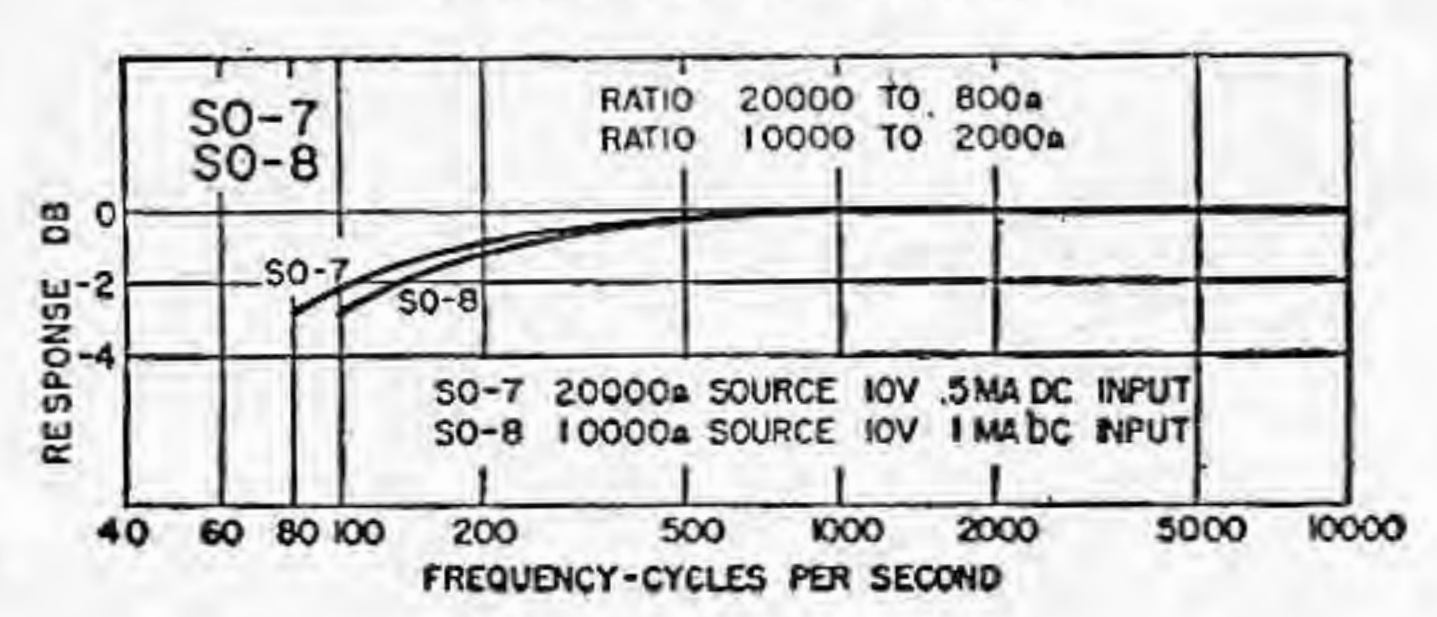
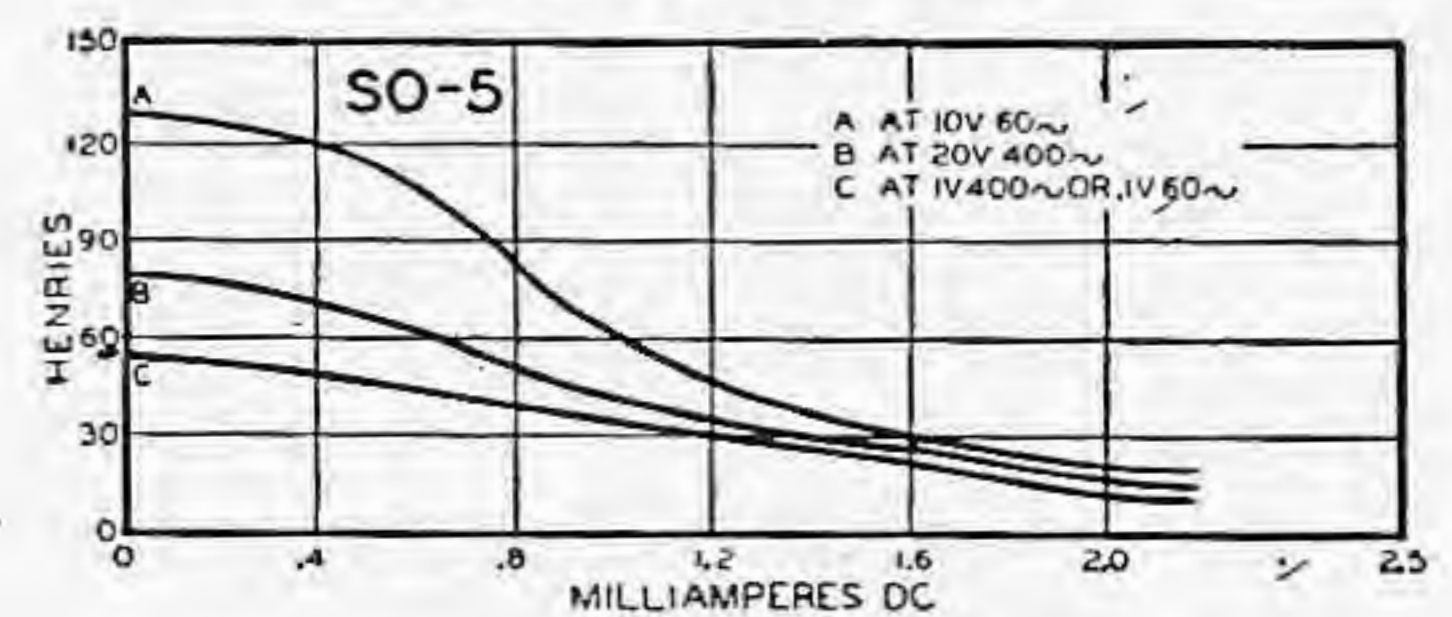
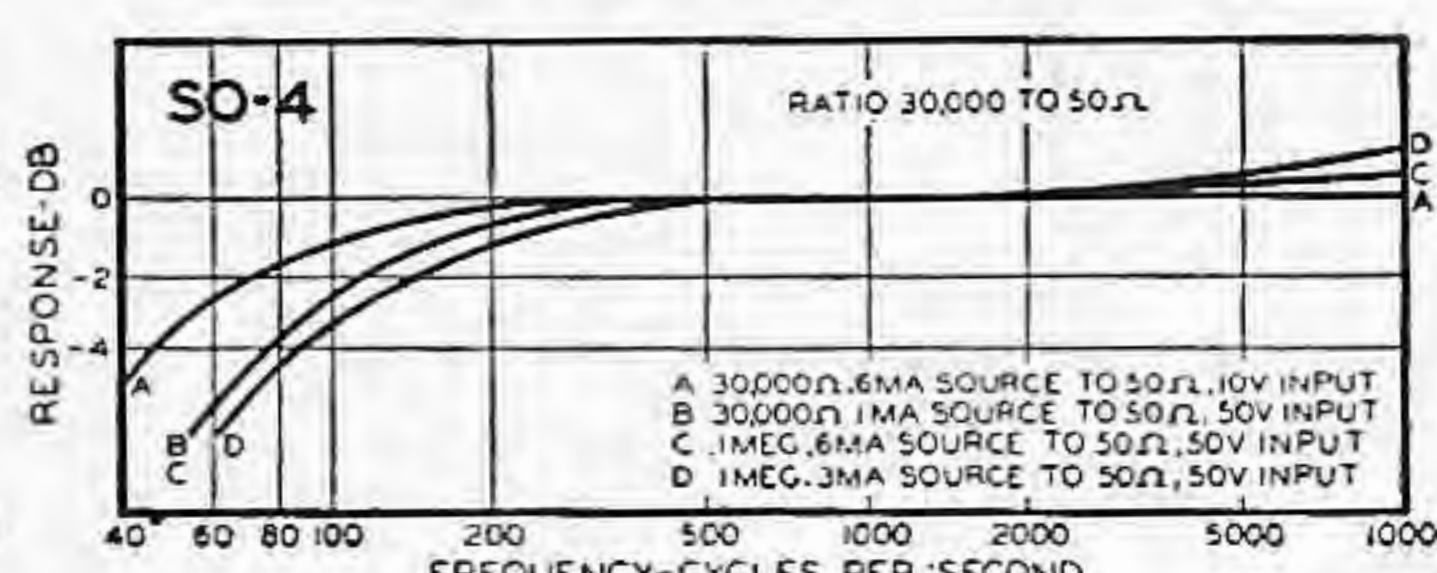
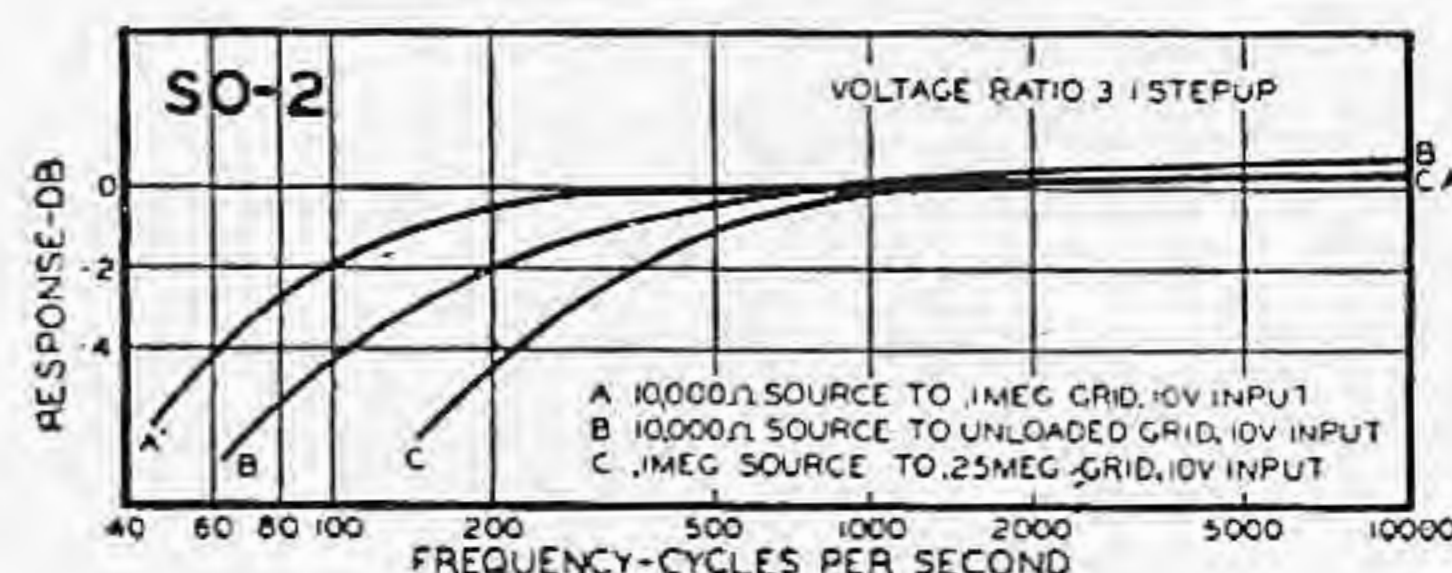
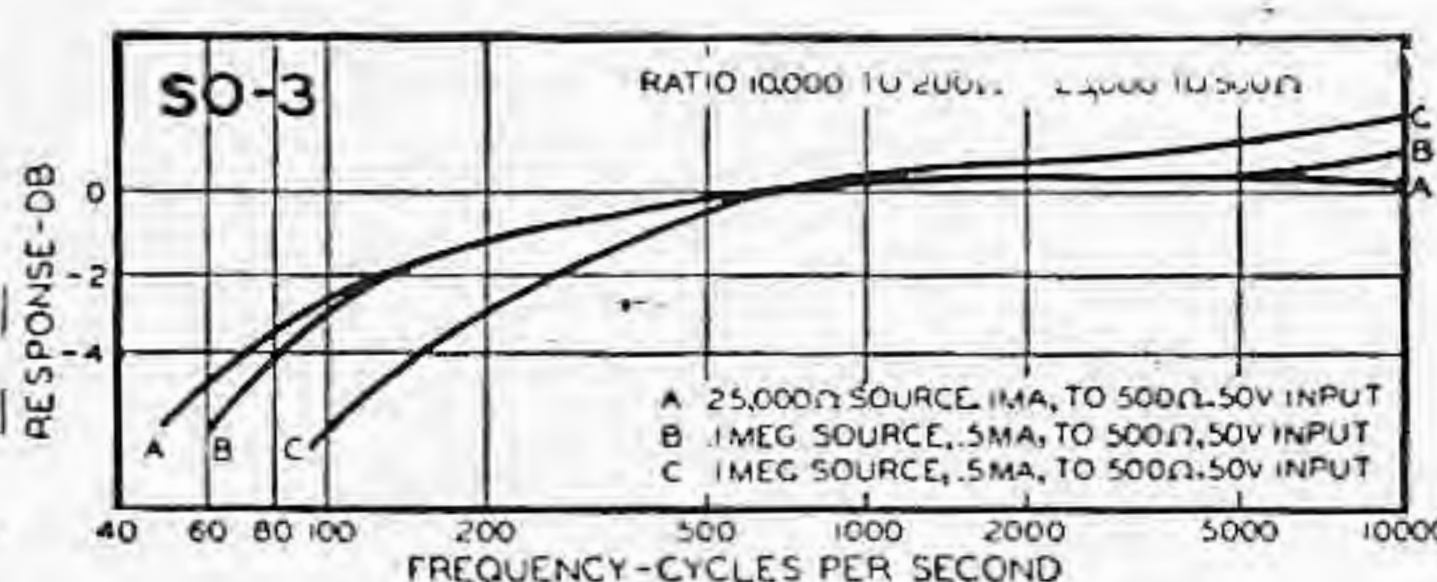
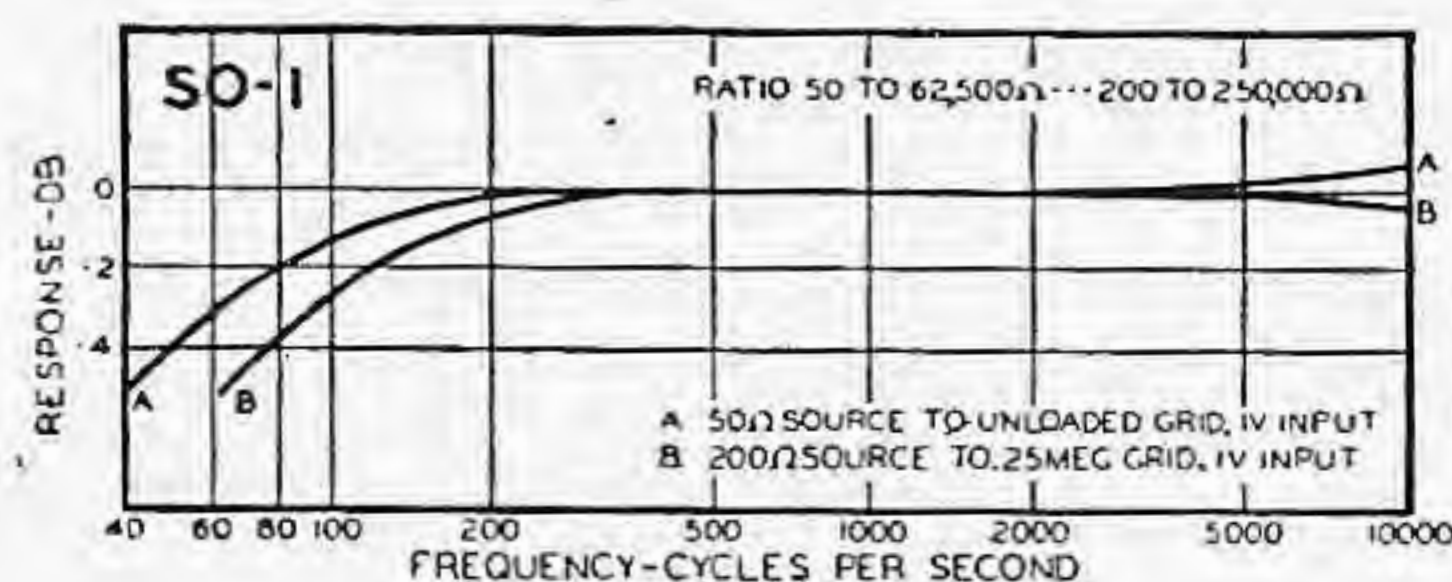


SUBOUNCER UNITS

UTC Subouncer units have high efficiency and frequency range in miniature size, handle higher level than SSO units above. The constructional details are identical to those of the Sub-Sub-Ouncer units (channel available on production orders). Available hermetically sealed on production orders (SOM case $\frac{11}{16} \times \frac{13}{16} \times \frac{1}{8}$).



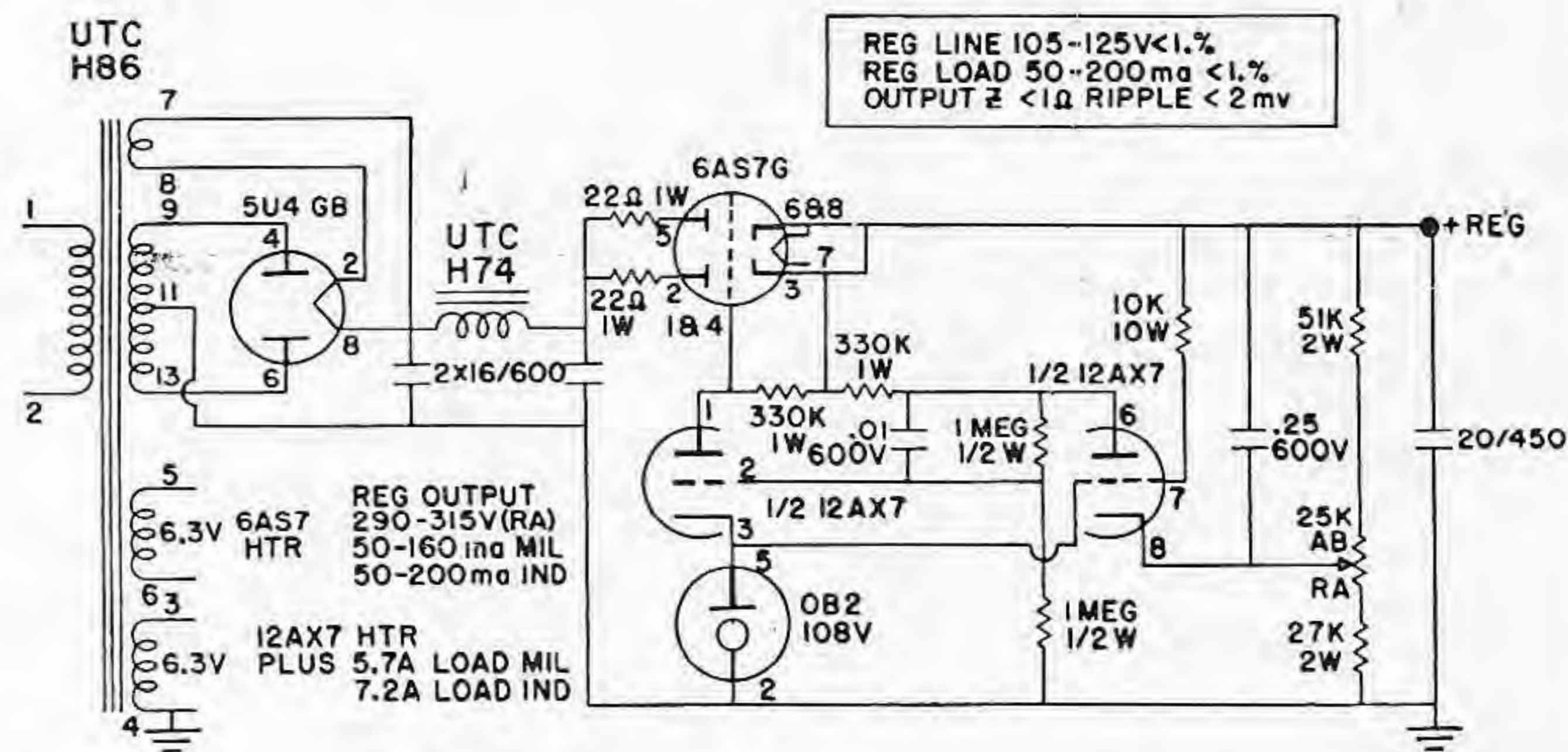
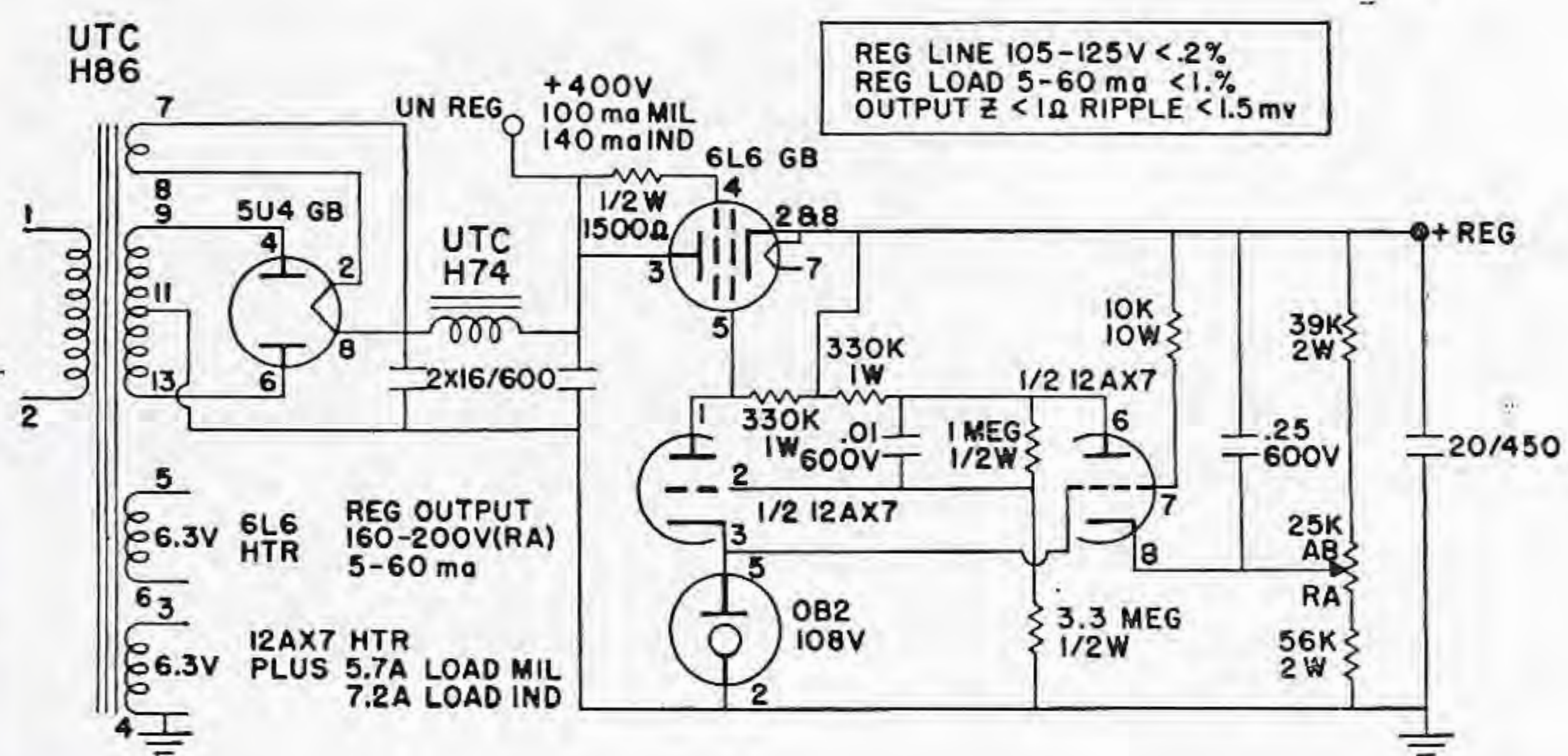
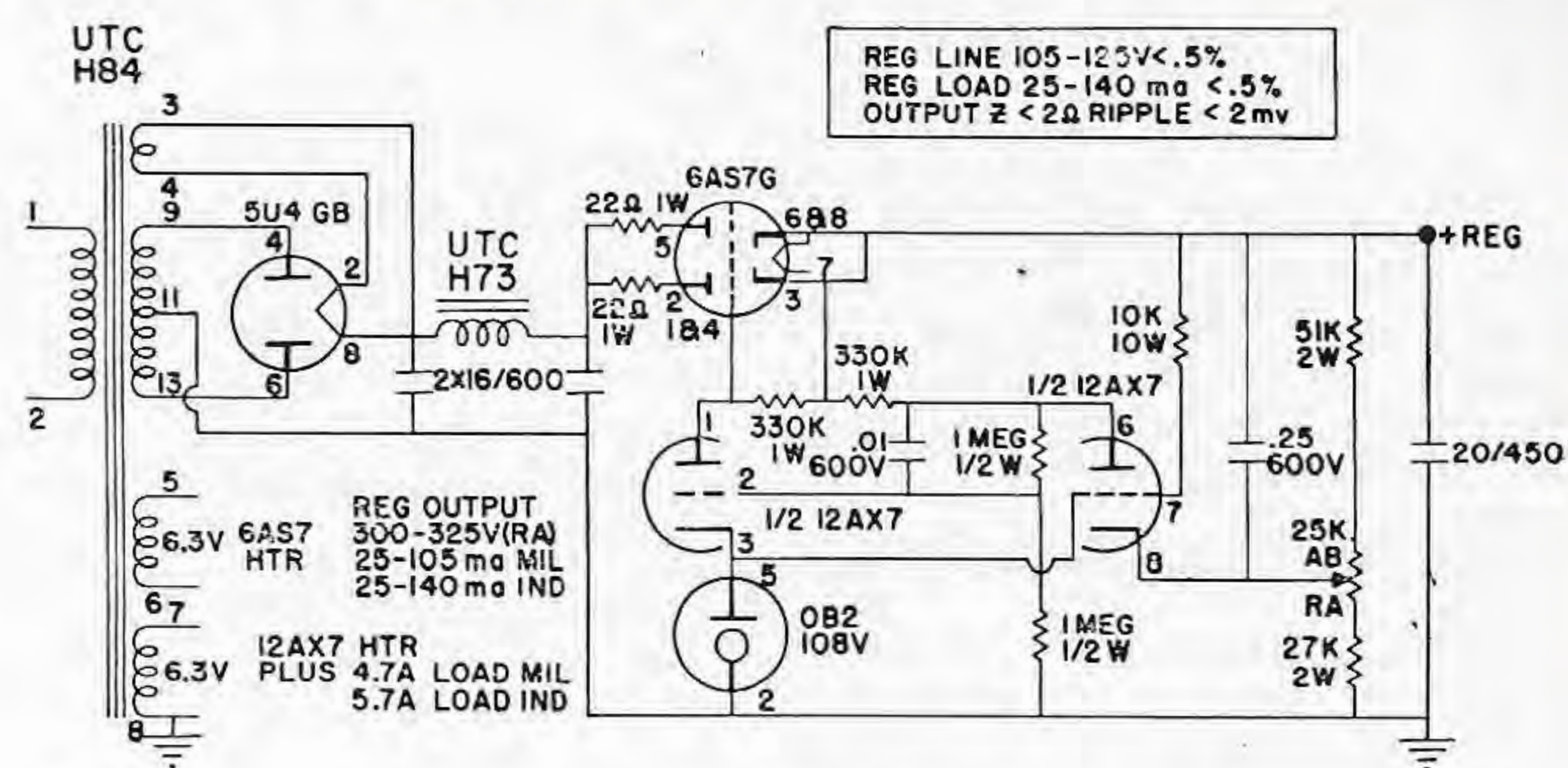
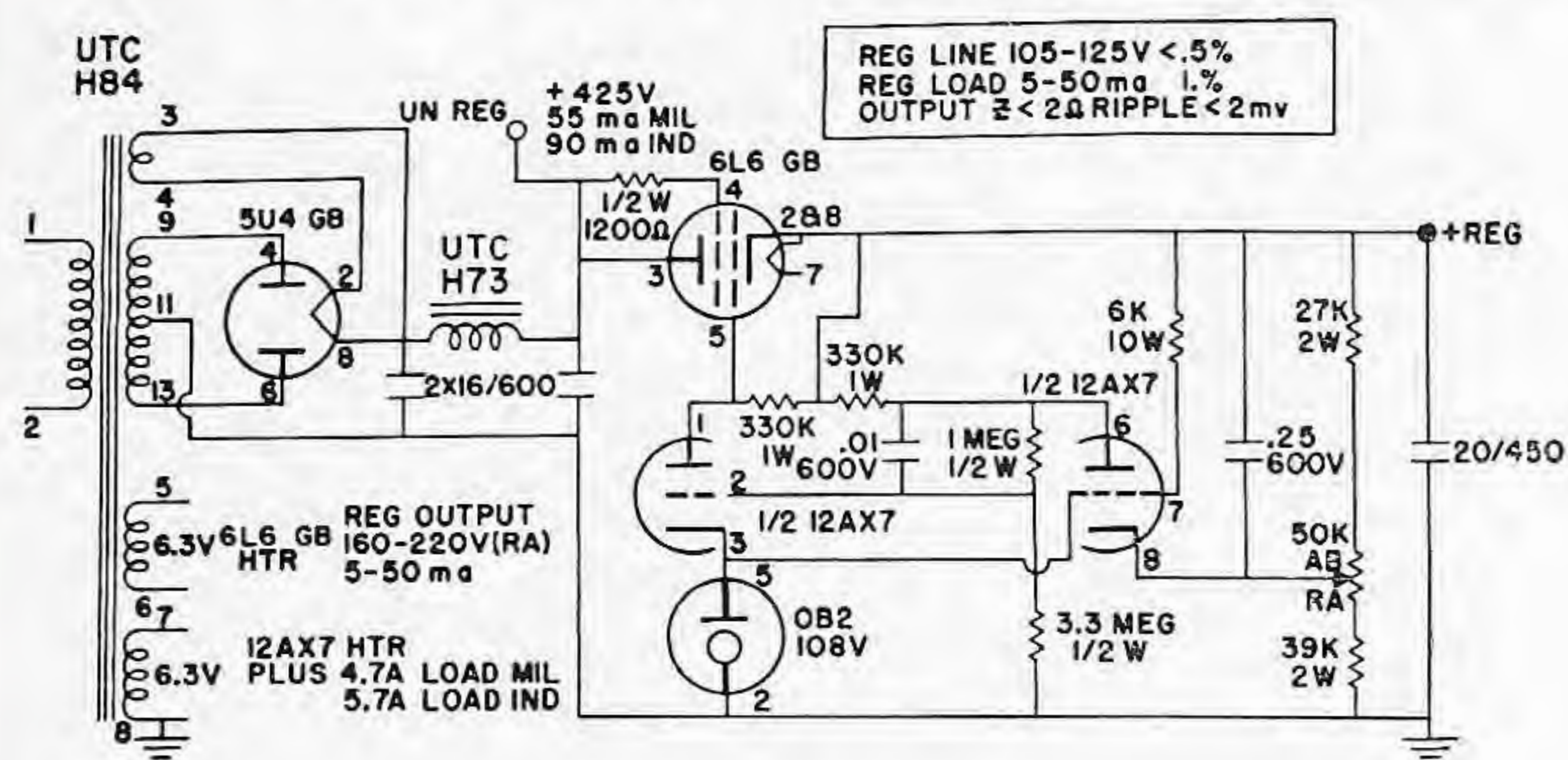
SUBOUNCER UNIT
Dimensions $\frac{11}{16} \times \frac{13}{16} \times \frac{1}{8}$ "
Weight03 lb.



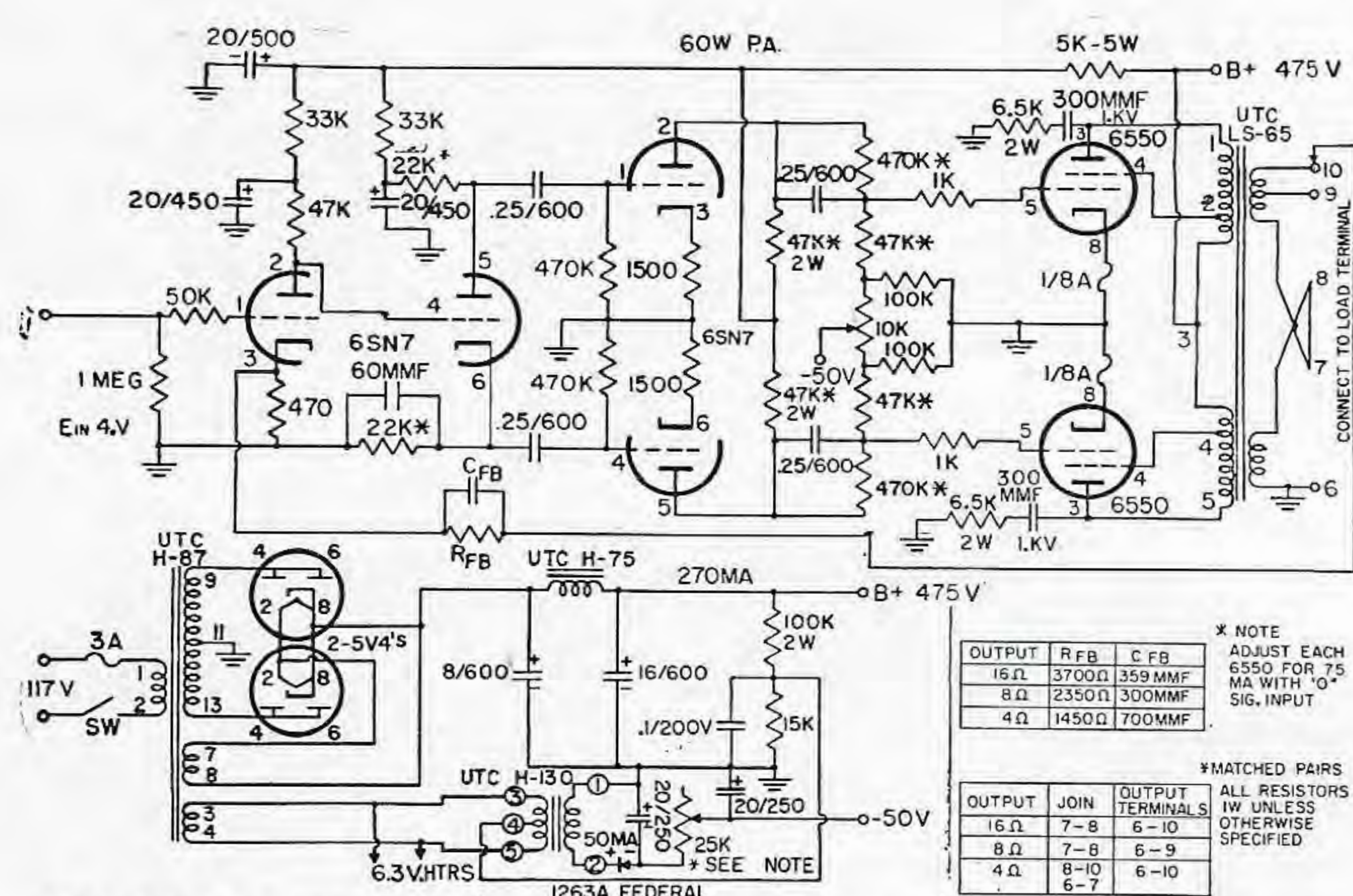
Type	Application	Max. Level dbm	Pri. Imp. ohms	Unbal. MA D.C. in Pri.	Sec. Imp. ohms	Pri. Res. ohms	Sec. Res. ohms
*SO-1	Input	+10	200 50	0	250 K 62.5 K	16	2500
SO-2	Interstage/3:1	+20	10K	0-25	90 K	215	1850
*SO-3	Plate to Line	+23	10K 25K	3 1.5	200 500	1225	30
SO-4	Output	+23	30K	1.0	50	1850	3.8
SO-5	Reactor 50 HY at 1 mil. D.C.				2675 ohms D.C. Res.		
SO-6	Output	+23	100K	.5	60	3400	3.7
*SO-7	Transistor Interstage	+23	20K 30K	.5 .5	800 1200	450	32
SO-8	Transistor to PP Sec.	+23	10K	1	2000 CT	1000	40
SO-9	PP Transistor to V.C.	+24	500 CT	0	3.2	15	.35
*SO-10	Transistor output to voice coil	+24	2000 CT 4000 CT	4 2	8 16	290	2

*Impedance ratio is fixed, 1250:1 for SO-1, etc. Any impedance between the values shown may be employed.

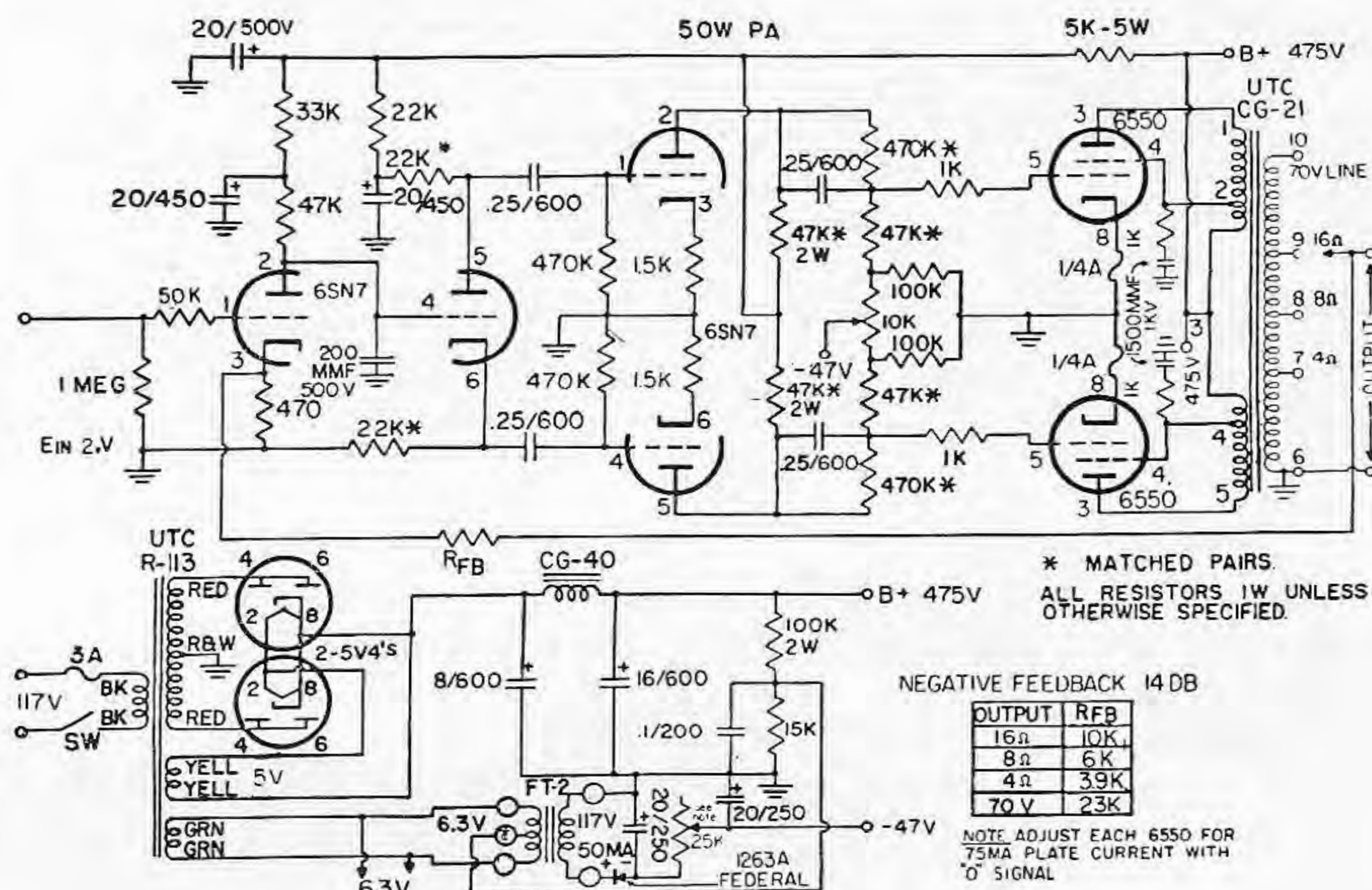
RECOMMENDED REGULATED POWER SUPPLY CIRCUITS



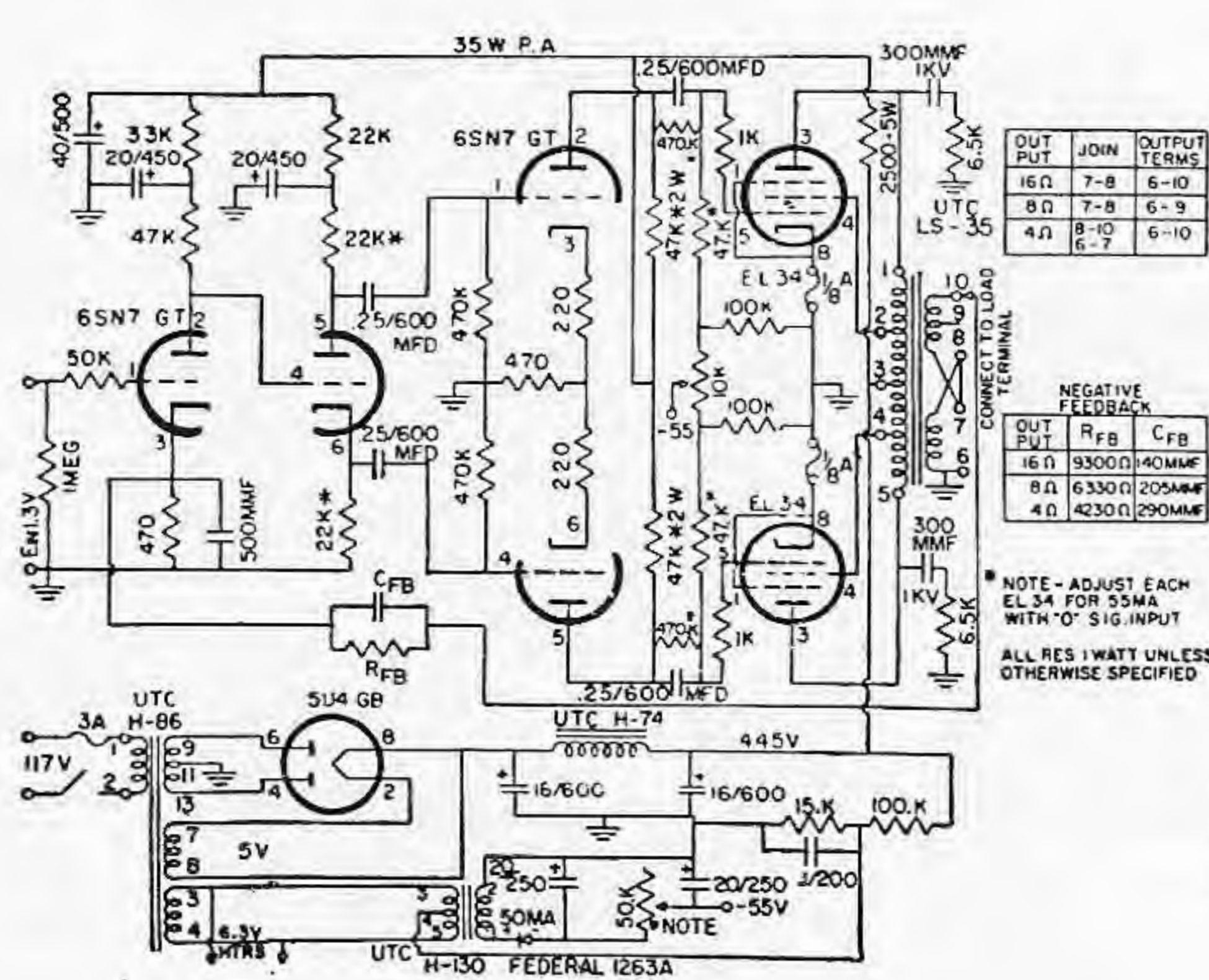
RECOMMENDED AUDIO AMPLIFIER CIRCUITS



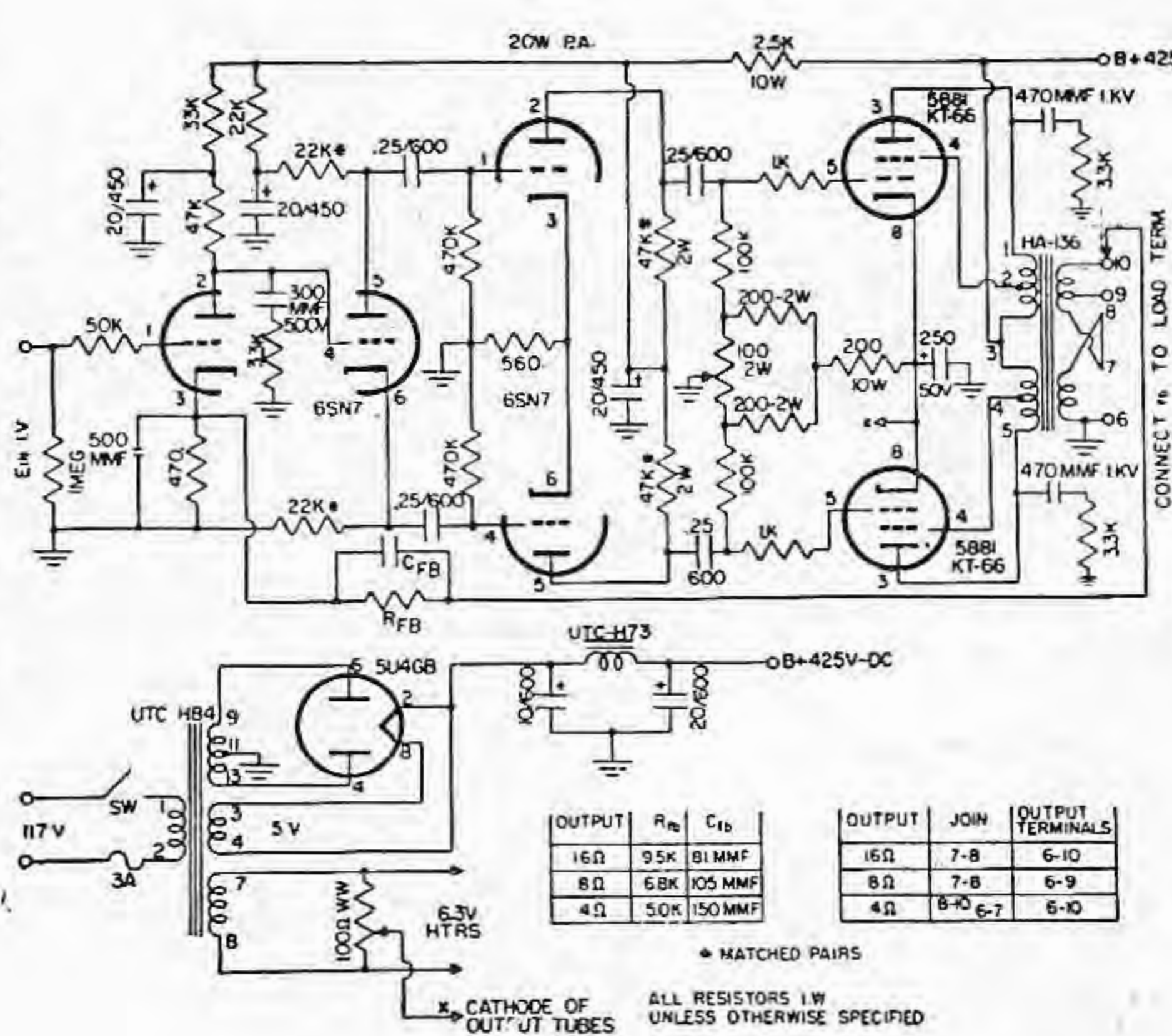
CIRCUIT PROVIDING 60 WATTS, $\pm$ 1 db from 15 cycles to 30 KC ...
At 1 watt, $\pm$ 1 db 3 cycles to 80 KC.



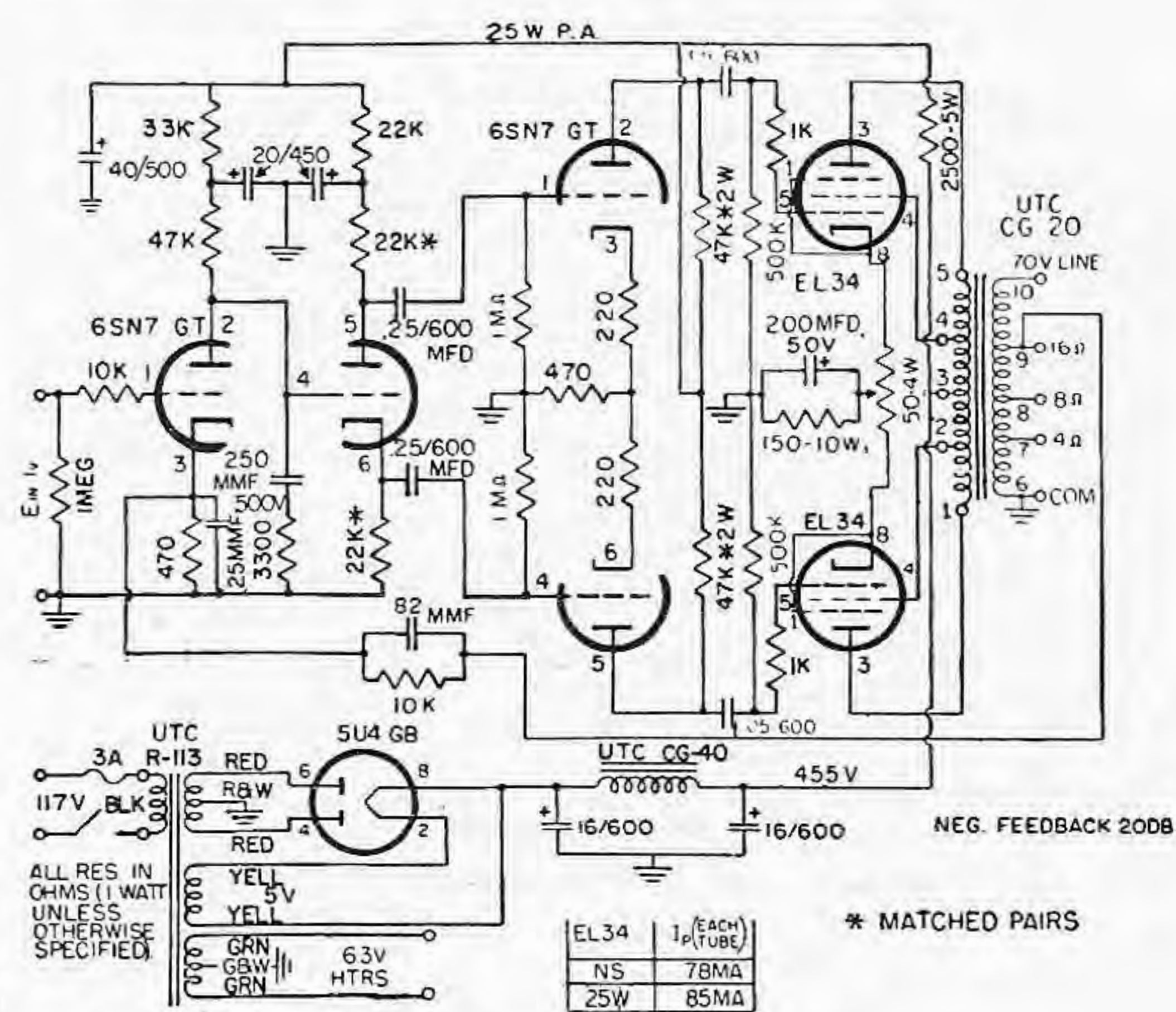
CIRCUIT PROVIDING 50 WATTS, $\pm$ 1 db 40 cycles to 10 KC ...
At 1 watt, $\pm$ 1 db 20 cycles to 20 KC.



CIRCUIT PROVIDING 35 WATTS, $\pm$ 1 db from 15 cycles to 30 KC ...
At 1 watt, $\pm$ 1 db 7 cycles to 100 KC.



CIRCUIT PROVIDING 25 WATTS, $\pm$ 1 db 40 cycles to 10 KC ...
At 1 watt, $\pm$ 1 db 20 cycles to 20 KC.



CIRCUIT PROVIDING 20 WATTS, $\pm$ 1 db 20 cycles to 30 KC ...
At 1 watt, $\pm$ 1 db 7 cycles to 100 KC.



LEADERSHIP IN HIGH FIDELITY

FACTORS CONTROLLING FREQUENCY RESPONSE. The figures at the right indicate the basic story with reference to high fidelity audio transformers. Figure 1 represents an ideal transformer having 100% efficiency. Figure 2 shows the equivalent of a practical transformer with its varied reactances and capacities. Figure 3 is an equivalent "T" network of the same transformer, which can be further simplified to the basic elements illustrated in Figure 4. It is apparent from Figure 4 that L_m (primary inductance) represents a reactance which drops with frequency and, as a consequence, controls the low frequency response. L_l (the leakage reactance) and C (the distributed capacity) similarly control the high frequency response. Figures 5 and 6 respectively show the frequency attenuation curves for given primary inductance and distributed capacity.

UTC FREQUENCY RESPONSE. It is obvious from the above that high primary inductance will provide good low frequency response. For a particular core structure this necessitates the use of a large number of turns in the transformer windings. Unfortunately, as the turns are increased, both leakage reactance and distributed capacitance increase, with a corresponding loss in the higher frequencies. This effect is minimized in UTC transformers by employing transformer core material of exceptional permeability, so that a minimum number of turns are required. In low level transformers we employ Hipermalloy, which is a stable nickel iron alloy selected for maximum characteristics. In high level transformers grain oriented silicon steels provide maximum permeability and minimum distortion. Uniquely low distributed capacity and leakage reactance are obtained through special winding methods. Output transformers will have as many as 16 interleaved windings to provide extremely low leakage reactance. Sectional windings are employed in input transformers to effect very low distributed capacity.

WAVE FORM DISTORTION. Low wave form distortion requires great care in both design and manufacture. UTC high fidelity products provide a minimum of such distortion through the use of conservative flux densities, symmetrical coupling in push pull windings, low leakage reactance, and negligible resonance in coil structures. For example, low distortion in high level transformer designs, necessitates excellent response down to 7 cycles to assure negligible distortion at 20 to 30 cycles. For low distortion at high frequencies, in addition to primary and secondary windings being interleaved, excellent coupling is provided between primary halves. As an example, the LS-692 modulation transformer employs 10 sections in each primary half . . . with these sections individually cross-interleaved.

SHIELDING. Inductive pickup in low level transformers is a basic circuit problem. The balanced coil structure, a development of the UTC engineering staff, is employed in the bulk of UTC low level transformers to provide very low pickup. This structure employs two accurately balanced astatic coils . . . virtually neutralizing stray pickup. In addition, the UTC high fidelity lines are housed in heavy high conductivity die castings, plus additional multiple alloy shields for many of the designs. While it is customary to make such shields of 47% nickel alloy, all UTC shields are 78% nickel to provide the greatest hum attenuation possible.

FLEXIBILITY. The multi-tapped winding, a development of the UTC engineering staff, provides a wide range of impedances in high fidelity transformers with excellent coupling and balance. High efficiency and full response are obtained at any of the impedances specified.

RELIABILITY. The designs of UTC high fidelity transformers are inherently centered around ruggedness and reliability. In addition, however, UTC quality control, which is accepted as the highest in the industry, assures the fulfillment of these design requirements in the ultimate manufactured product. The recognition of the dependability of UTC units is illustrated by their usage in the finest broadcast equipment, produced by such organizations as RCA, General Electric, etc.

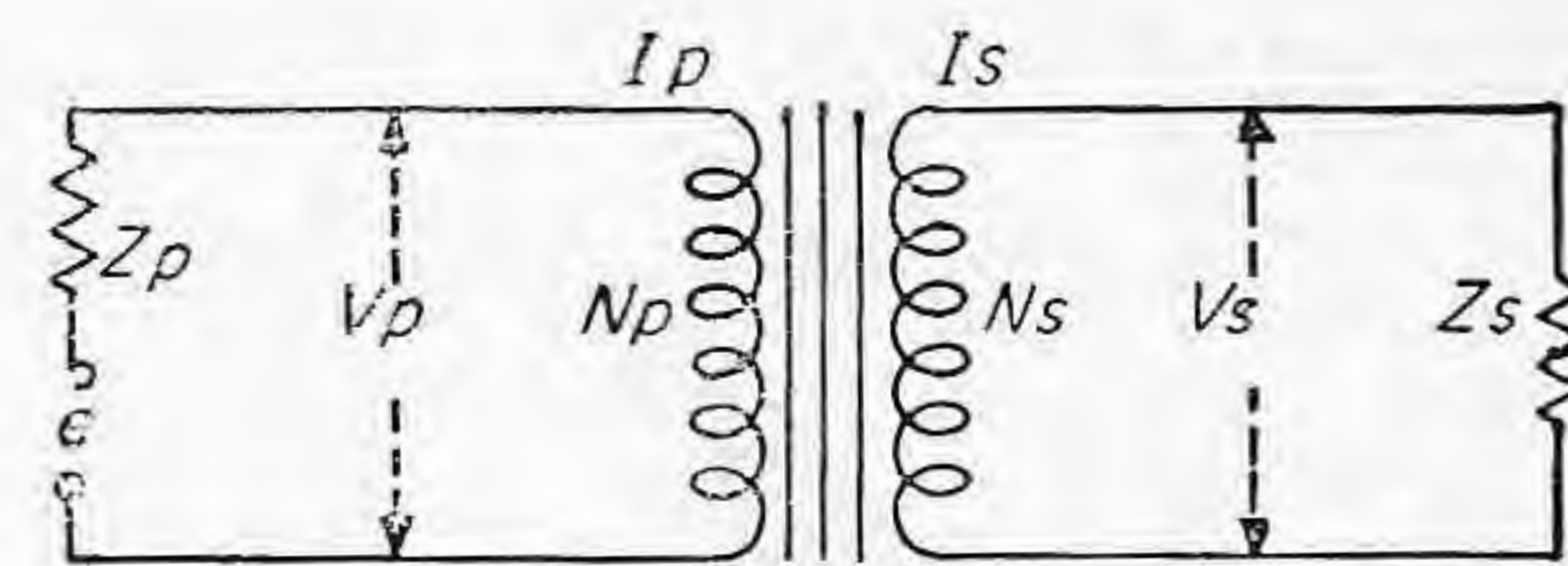


Fig 1

ELECTRICAL CIRCUIT OF AN IDEAL TRANSFORMER WITH 100 PERCENT EFFICIENCY

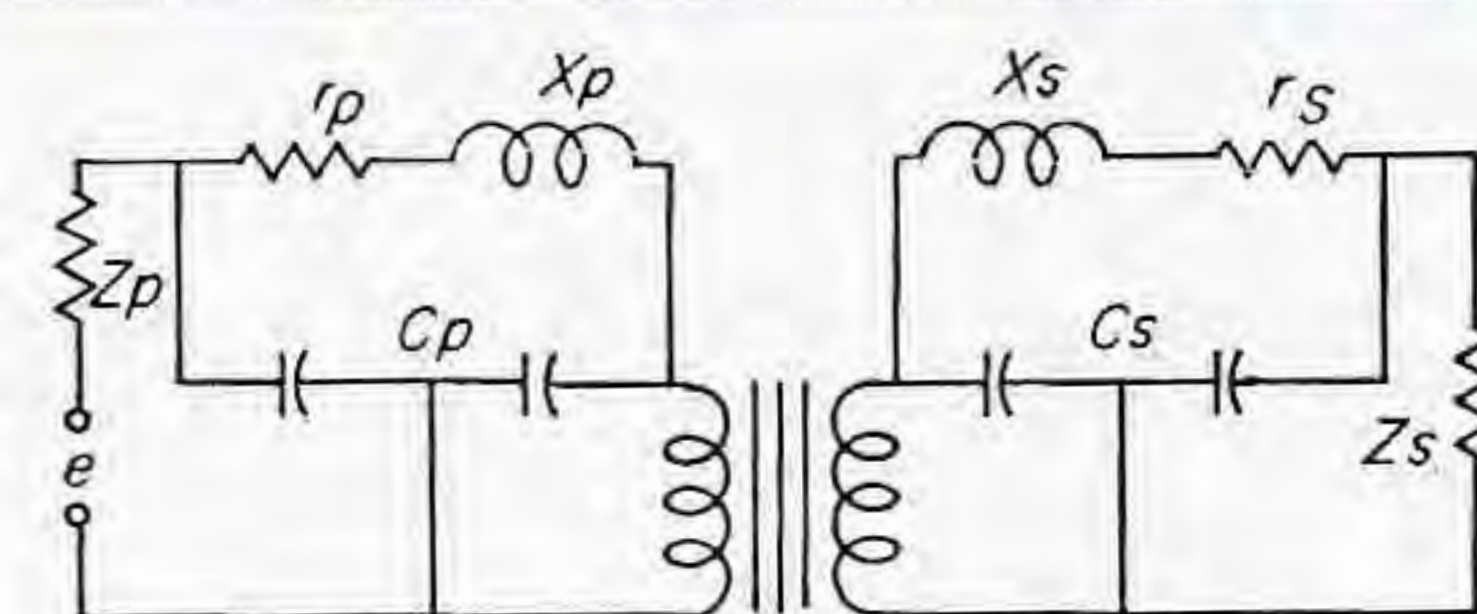


Fig 2

ILLUSTRATING A PHYSICAL TRANSFORMER

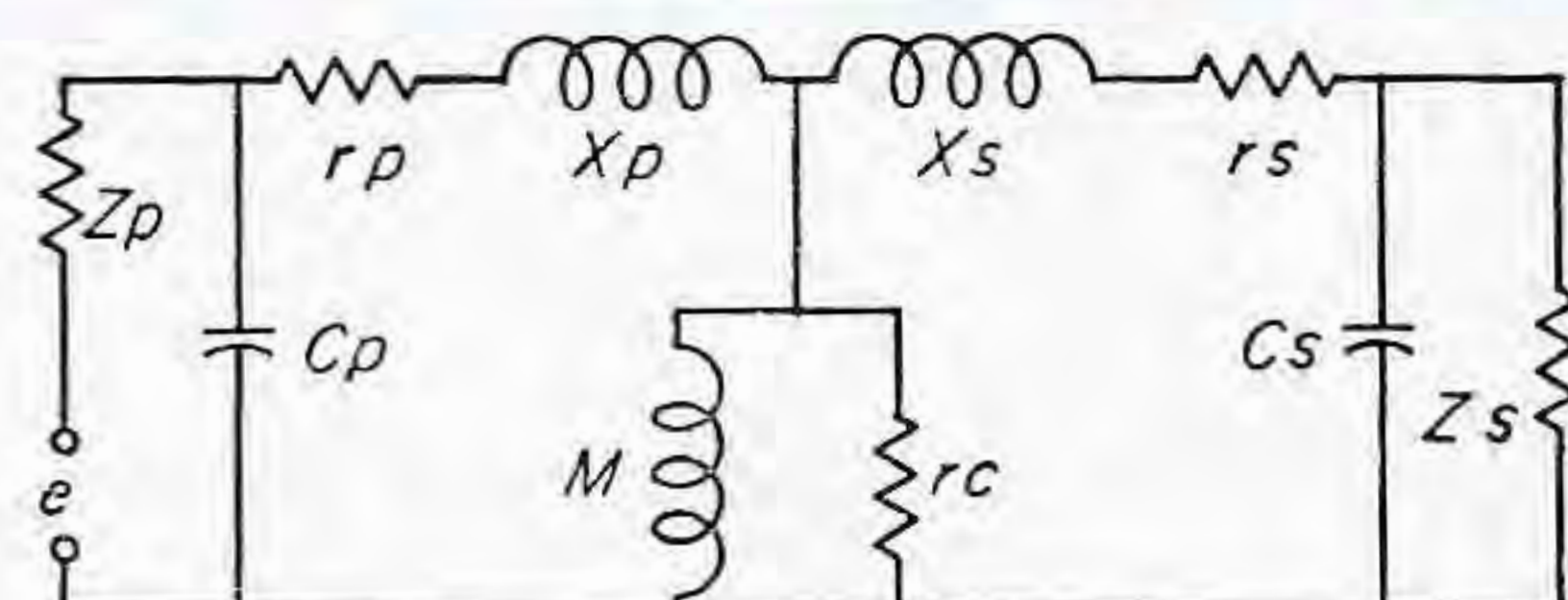


Fig 3

EQUIVALENT T NETWORK OF THE SAME TRANSFORMER IN FIG 2

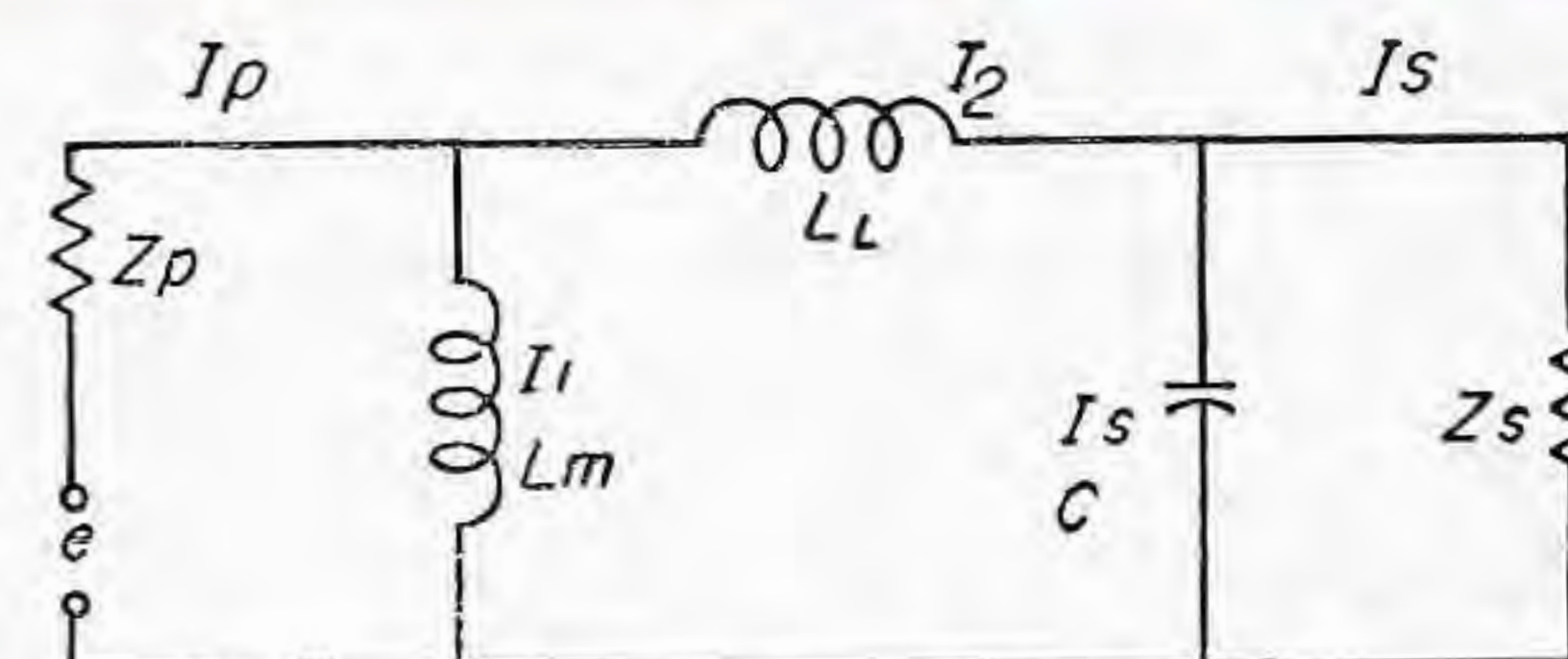


Fig 4

A SIMPLIFICATION OF THE EQUIVALENT TRANSFORMER CIRCUIT SHOWN IN FIG 3

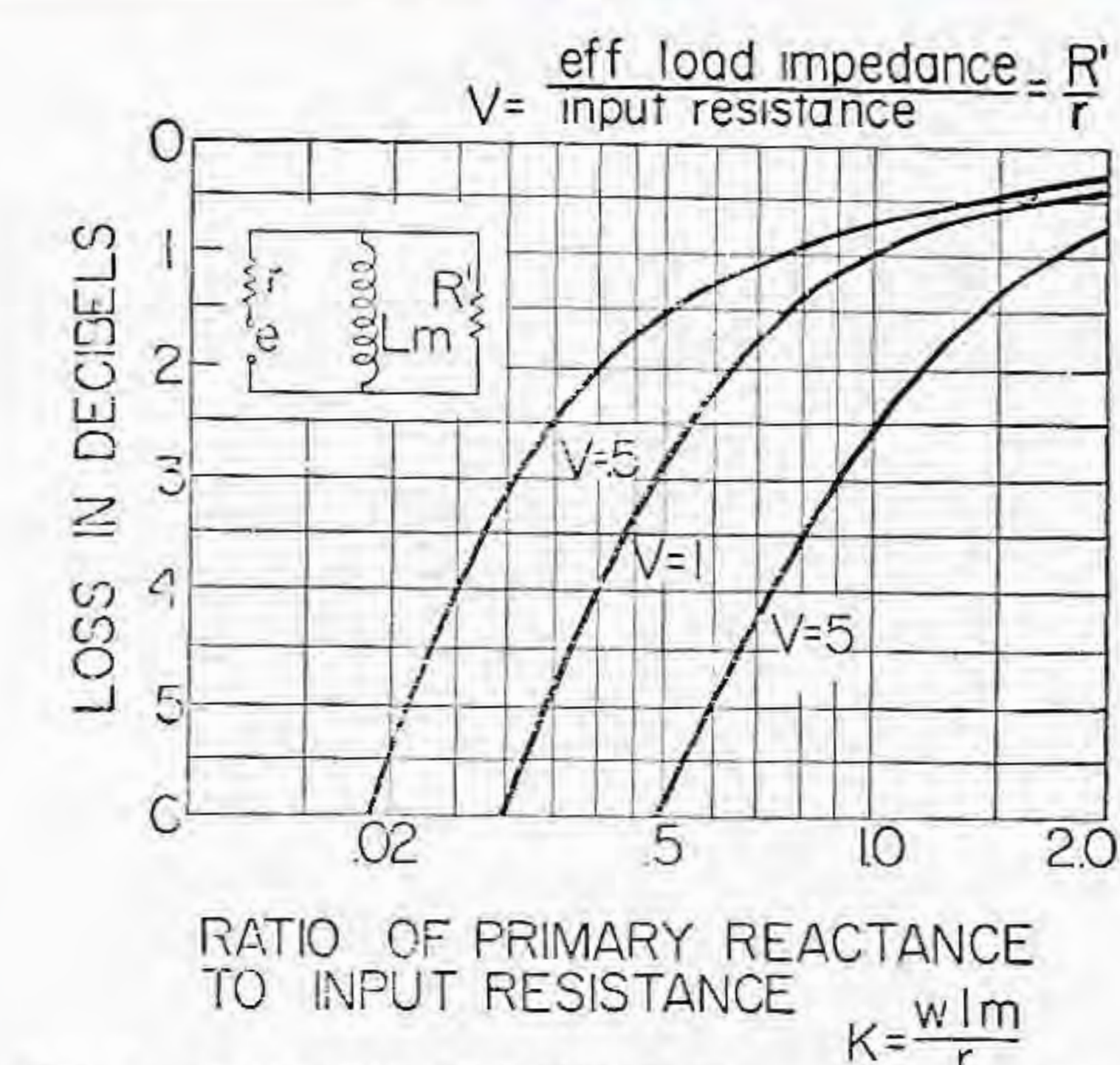


FIG.5 CURVES SHOWING THE LOSS DUE TO SHUNTING EFFECT OF THE PRIMARY OF A TRANSFORMER

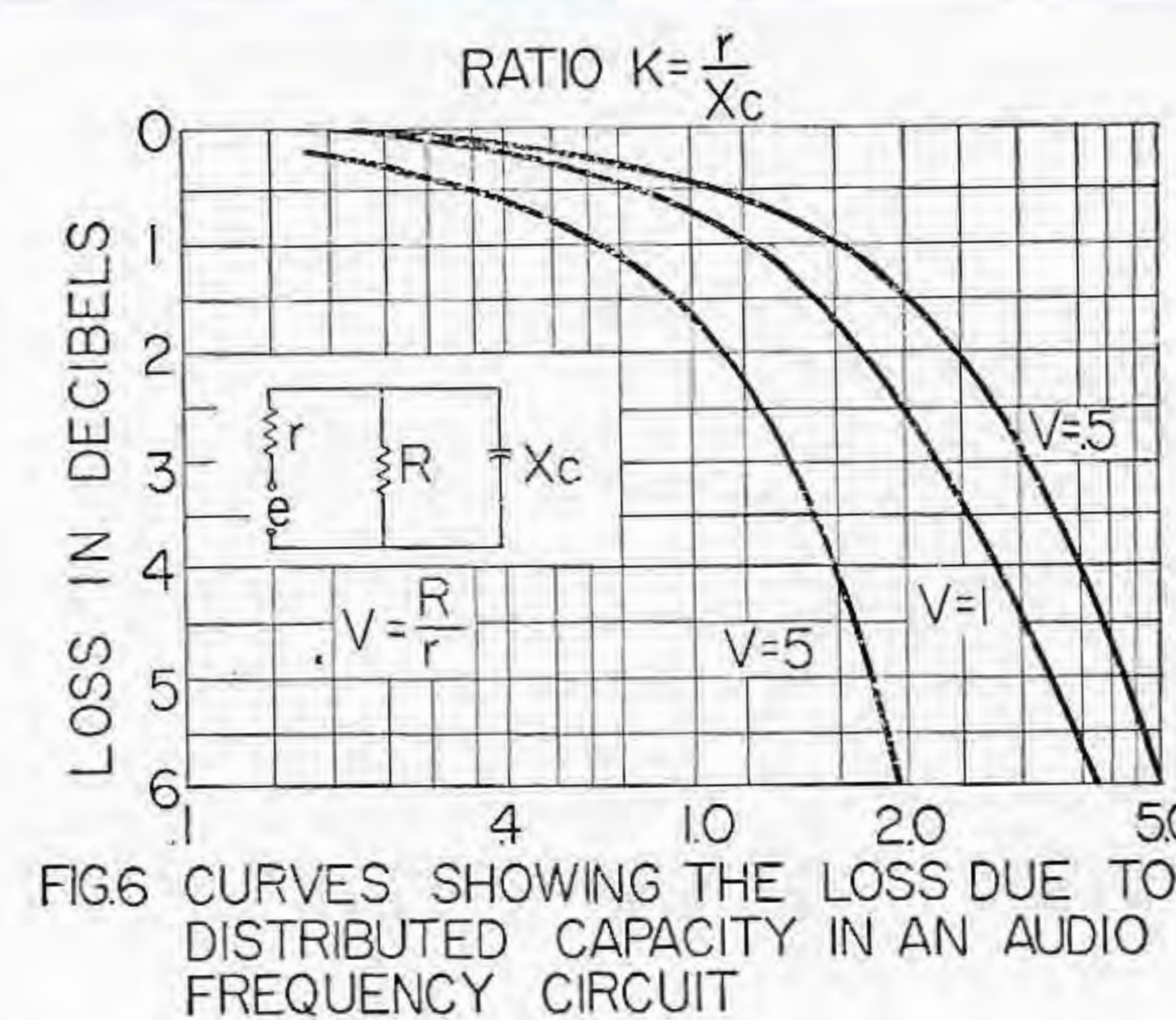
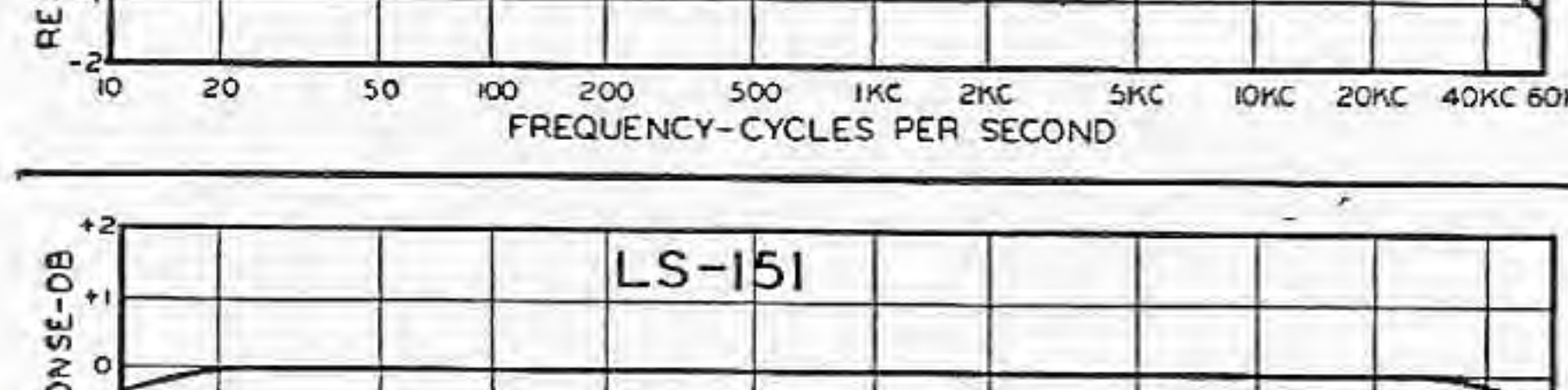
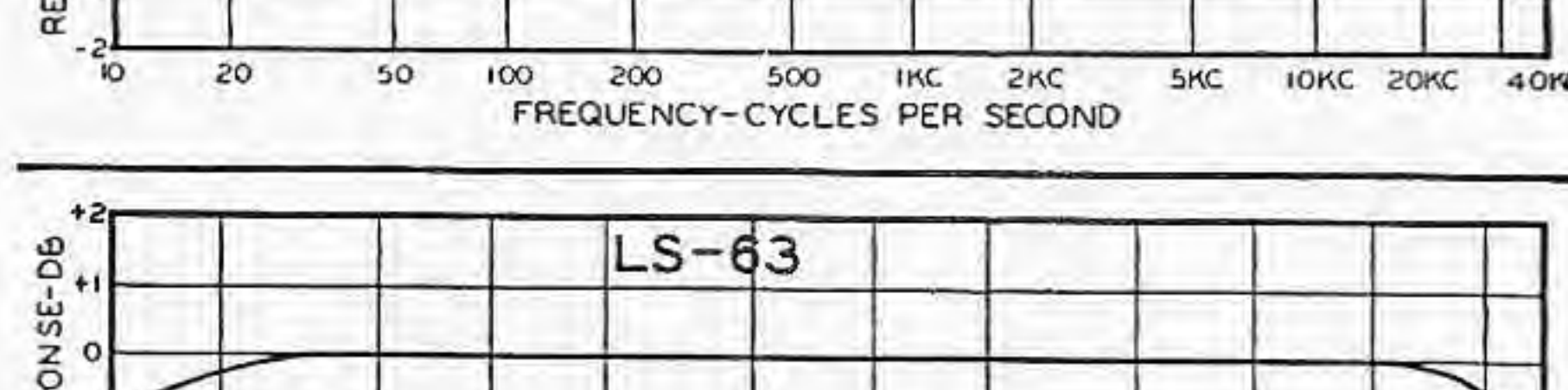
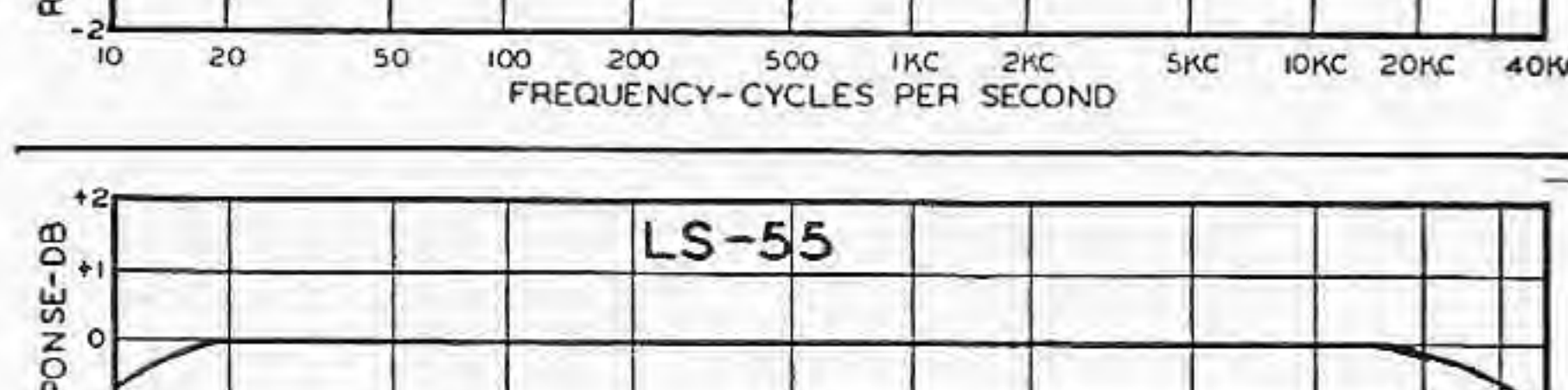
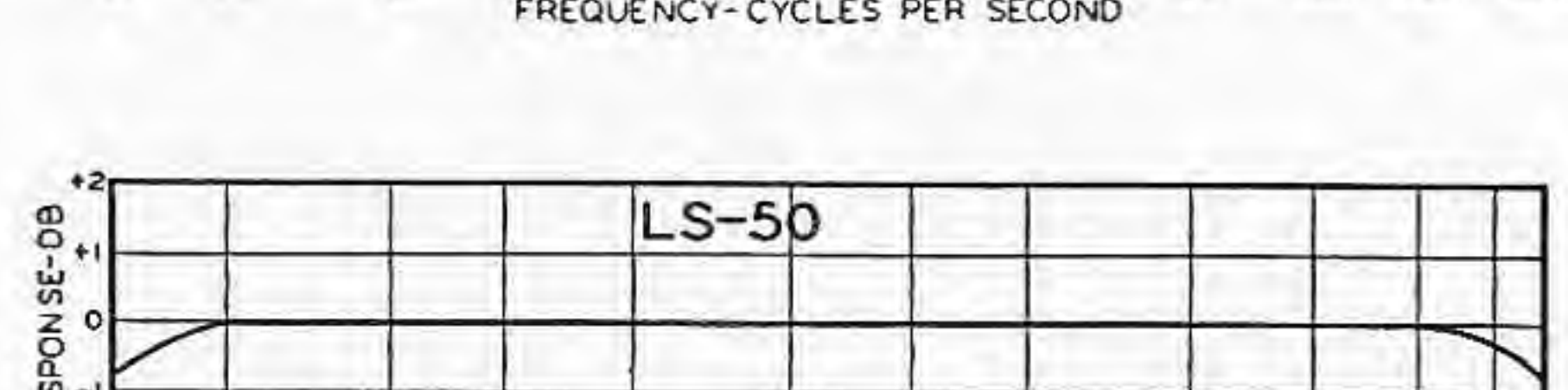
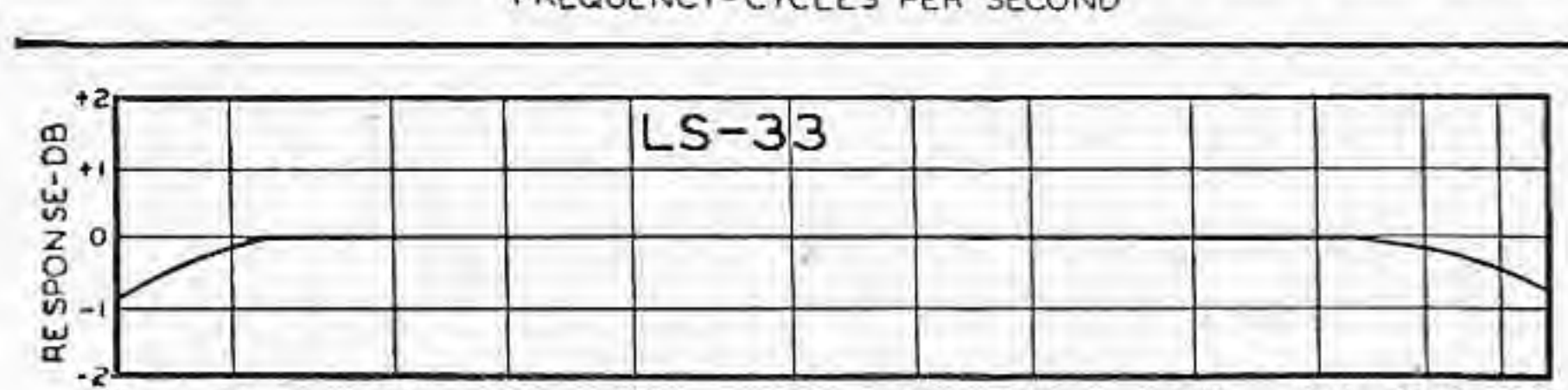
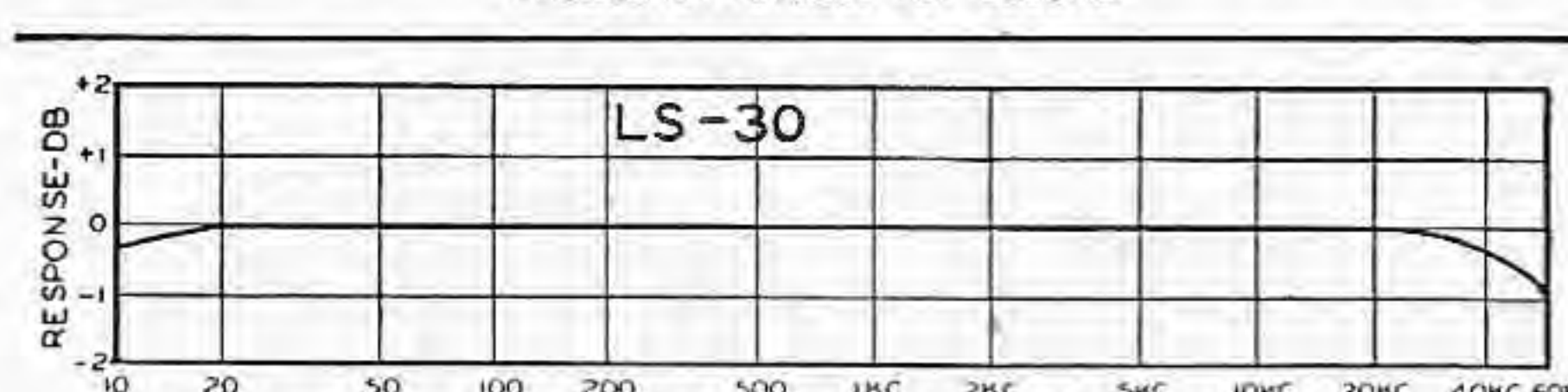
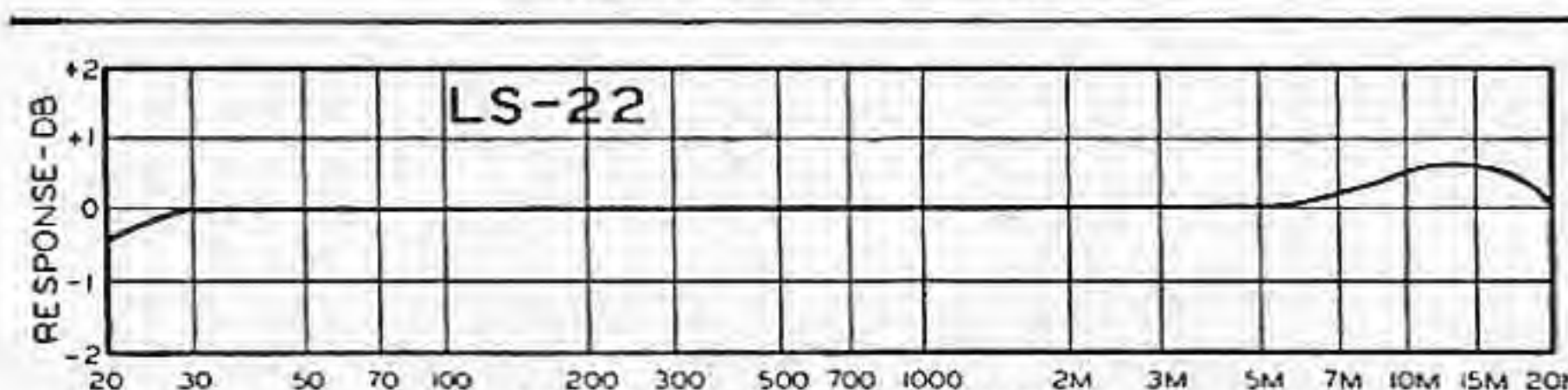
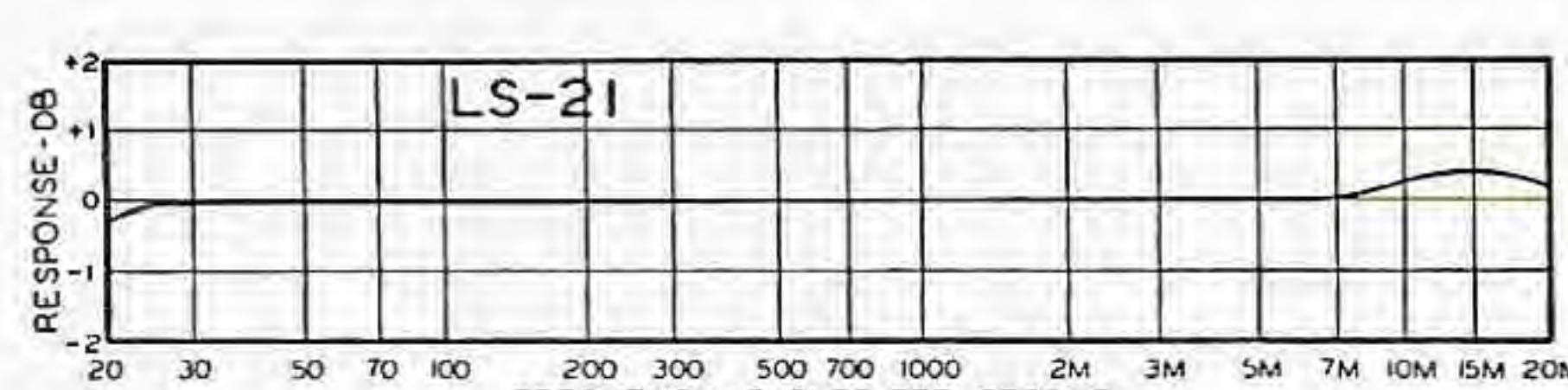
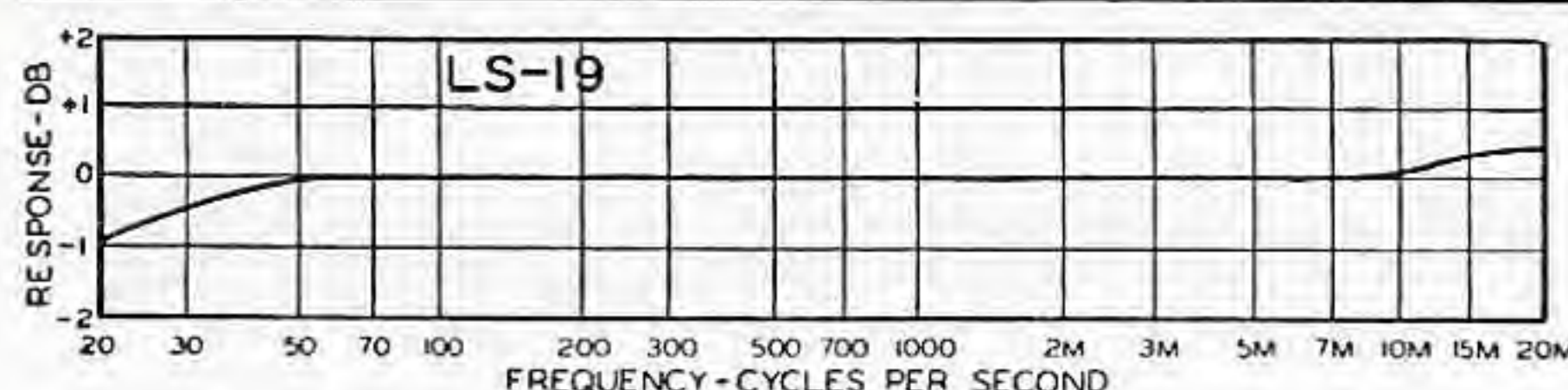
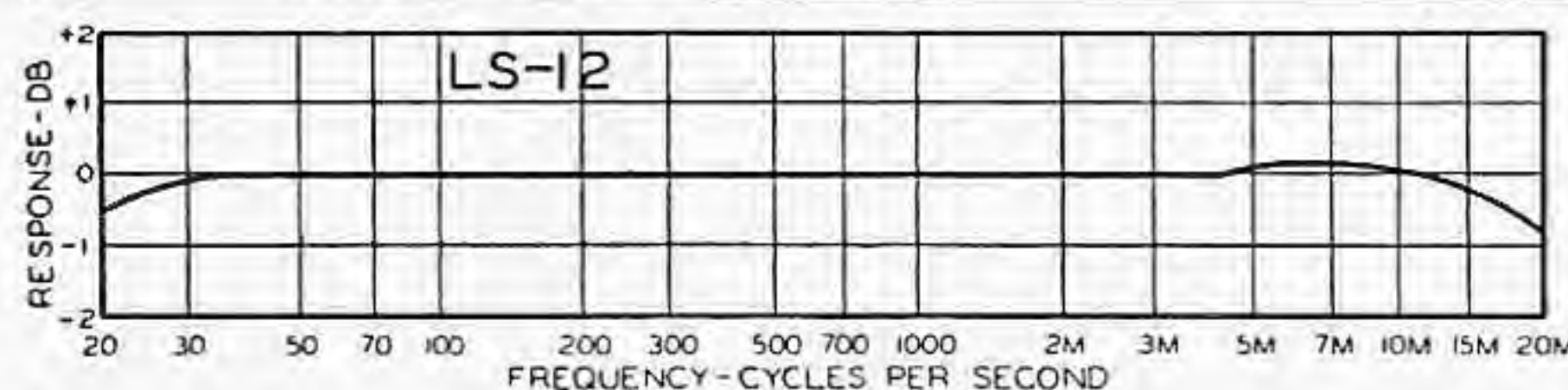
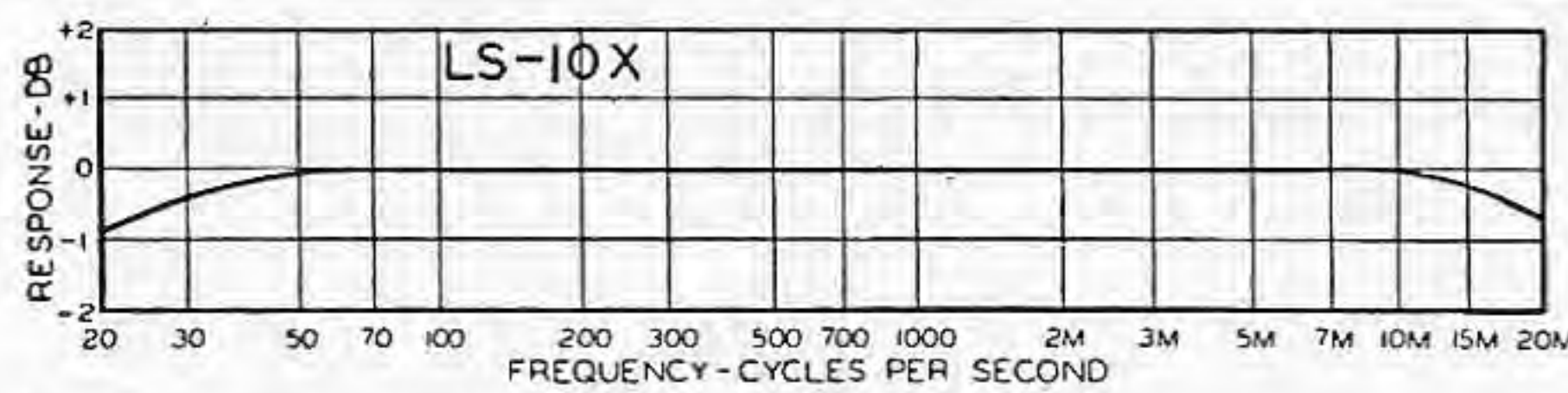
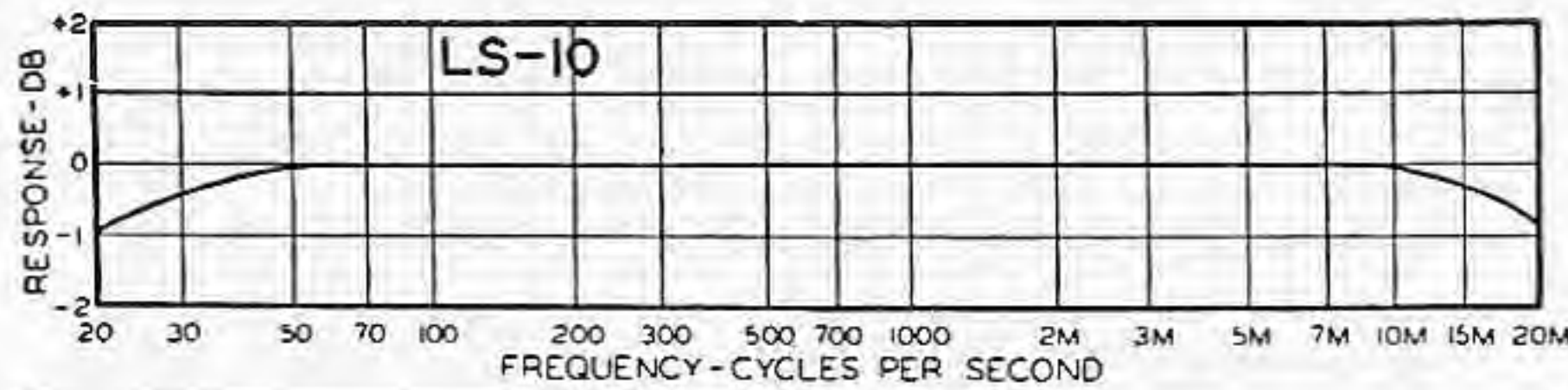


FIG.6 CURVES SHOWING THE LOSS DUE TO DISTRIBUTED CAPACITY IN AN AUDIO FREQUENCY CIRCUIT



LINEAR STANDARD AUDIO TRANSFORMERS

The ever increasing use of wide range equipment has reached the point where the major limiting factor is the frequency range of the transformers employed. UTC Linear Standard components represent the closest approach to the ideal transformer from the standpoint of uniform frequency response, low wave form distortion, high efficiency, thorough shielding, and dependability.



LOW IMPEDANCE TO GRID AND MIXING TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level dbm	Relative* hum	Unbal. DC in primary	Case No.
LS-10	Low impedance mike, pickup, or multiple line to push pull grids	50, 125/150, 200, 250, 333, 500/600 ohms	60,000 ohms in two sections	20-20,000	+19	-74 DB	.5 MA	LS-1
LS-10X	As above	As above	50,000 ohms	20-20,000	+17	-92 DB-Q	.5 MA	LS-1
LS-12	Low impedance mike, pickup, or multiple line to push pull grids	50, 125/150, 200, 250, 333, 500/600 ohms	120,000 ohms overall, in two sections	20-20,000	+19	-74 DB	.5 MA	LS-1
LS-12X	As above	As above	80,000 ohms overall, split	20-20,000	+17	-92 DB-Q	.5 MA	LS-1
LS-14X	Low impedance mike, pickup, or parallel mixer to grid	2.5, 5.5, 10, 15, 22, 30, 38, 60 ohms	50,000 ohms	20-20,000	+17	-92 DB-Q	.5 MA	LS-1
LS-15X	Three isolated lines or pads to one or two grids	30, 50, 200, 250 ohms each primary	60,000 ohms overall, in two sections	20-20,000	+17	-92 DB-Q	.5 MA	LS-1
LS-18	High level multiple line to push pull grids	50, 125/150, 200, 250, 333, 500/600 ohms	50,000 ohms overall, in two sections	20-20,000	+28	-50 DB	.5 MA	LS-2
LS-26	Bridging line to single or push pull grids	5,000 ohms	60,000 ohms in two sections	15-20,000	+23	-74 DB	0 MA	LS-1
LS-30**	Mixing, low impedance mike, pickup or multiple line to multiple line	50, 125/150, 200, 250, 333, 500/600 ohms	50, 125/150, 200, 250, 333, 500/600 ohms	7-50,000	+23	-74 DB	.5 MA	LS-1
LS-30X**	As above	As above	As above	20-20,000	+20	-92 DB-Q	.3 MA	LS-1
LS-31	Three isolated lines or pads to multiple line	30, 50, 200, 250 ohms each primary	50, 125/150, 200, 250, 333, 500/600 ohms	20-20,000	+23	-74 DB	.5 MA	LS-1
LS-32	Mixing, low impedance mike, pickup or parallel mixer to multiple line	2.5, 5.5, 10, 15, 22, 30, 38, 60 ohms	50, 125/150, 200, 250, 333, 500/600 ohms	20-20,000	+23	-74 DB	.5 MA	LS-1

INTERSTAGE AND DRIVER TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level dbm	Relative* hum	Unbal. DC in primary	Case No.
LS-19	Plate to PP grids like 2A3, 6L6, 5881 Split secondary	15,000 ohms	95,000 ohms 1.25:1 each side	20-20,000	+20	-50 DB	0 MA	LS-1
LS-21	Plate to PP grids Split pri. and sec.	15,000 ohms	135,000 ohms; 3:1 overall	10-20,000	+20	-74 DB	0 MA	LS-1
LS-40	Plate to PP grids Split secondary	15,000 ohms	135,000 ohms; 3:1 overall	30-18,000 (± 2 db)	+20	-74 DB	8 MA	LS-1
LS-25	PP plates to PP grids Med. level split pri. and sec.	30,000 ohms plate to plate	50,000 ohms; turn ratio 1.3:1 overall	20-20,000	+23	-74 DB	1 MA	LS-1
LS-6	Driver, push pull 2A3's, etc., to push pull 845 or 211D grids	5,000 ohms plate to plate	2:25 primary impedance; turns ratio 1.5:1 overall	20-20,000	15 watts		5 MA	LS-2
LS-47	Driver from push pull 2A3's, or sim. to class B828's, 805's, or ZB120's	5,000 ohms plate to plate	.1 pri. impedance turns ratio, Pri./1/2 Sec. 3.2:1	20-20,000	20 Watts		5 MA	LS-2
LS-48	Driver trans. push pull 845's to 805 grids in class B	12,000 ohms plate to plate	.038 pri. impedance turns ratio, Pri./1/2 Sec. 5.1:1	20-20,000	40 Watts		15 MA	LS-3

HYBRID AND REPEAT COILS

Type No.	Application	Pri and Sec. Impedances	± 1 db from	Max. Level dbm	Relative* hum	Unbal. DC in primary	Case No.
LS-140	Line to line for Isol. balanced and unbal. cir.; bal. for max. cross talk 70 DB	500/600 ohms split 500/600 ohms split	30-20,000	+18	-92 DB-Q	0 MA	LS-1
LS-141	Three sets of bal. wind. for hybrid service, centertapped	500/600 ohms 500/600 ohms	30-15,000	+18	-74 DB	0 MA	LS-1

The values of unbalanced DC shown will effect approximately 1.5 DB loss at 30 cycles.
 * Comparison of hum balanced unit with shielding to normal uncased type. Q = Multiple alloy magnetic shields.
 ** High electrostatic shielding.



LINEAR STANDARD AUDIO TRANSFORMERS

PLATE, CRYSTAL, PHOTOCELL, AND BRIDGING TO LINE TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level dbm	Relative* hum	Unbal. DC in primary	Case No.
LS-27	Single pl. to multiple line	15,000 ohms	50, 125/150, 200, 250, 333, 500/600	30-15,000	+23	-74 DB	8 MA	LS-1
LS-50	Single pl. to multiple line	15,000 ohms	50, 125/150, 200, 250, 333, 500/600	10-40,000	+23	-74 DB	0 MA	LS-1
LS-51	Push pull low level pl. to multiple line	30,000 ohms plate to plate	50, 125/150, 200, 250, 333, 500/600	10-40,000	+24	-74 DB	1 MA	LS-1
LS-150	Bridging from 50 to 500 ohm line to line	4,000 ohms, bridging	50, 125/150, 200, 250, 333, 500/600	7-50,000	+23	-74 DB	1 MA	LS-1
LS-151	Bridging from 50 to 500 ohm line to line	16,000 ohms, bridging	50, 125/150, 200, 250, 333, 500/600	7-50,000	+26	-74 DB	1 MA	LS-1

HIGH LEVEL MATCHING TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	±1 db from	Max. Level	Case No.
LS-33	High level line matching	50, 125, 200, 250, 333, 500/600 ohms	1.2, 2.5, 5, 7.5, 10, 15, 20, 30, 50, 125, 200, 250, 333, 500/600	10-40,000	20 watts	LS-2
LS-34	High level line matching	50, 125, 200, 250, 333, 500/600 ohms	1.2, 2.5, 5, 7.5, 10, 15, 20, 30, 50, 125, 200, 250, 333, 500/600	10-40,000	40 watts	LS-3

OUTPUT TRANSFORMERS TO LINE AND VOICE COIL

Type No.	Primary will match typical tubes	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level	Case No.
LS-52	Push pull 6AQ5, 6V6, 6L6, 5881	8,000 ohms	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-54	Same as above	8,000 ohms	30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-55	Push pull 2A3's, 300B, 6L6's, 6AS7G, 6080, 350B	5,000 ohms plate to plate and 3,000 ohms plate to plate	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-57	Same as above	5,000 ohms plate to plate and 3,000 ohms plate to plate	30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-58	Push pull parallel as above	2,500 ohms plate to plate and 1,500 ohms plate to plate	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	10-50,000	40 watts	LS-3
LS-61	Push pull triode; 6AS7G, 6080, 6L6, 5881, KT-66, 807, 1614	10,000 ohms pl. to plate and 6,000 ohms plate to plate	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-63	Same as above	10,000 ohms pl. to plate and 6,000 ohms plate to plate	30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-6L1	Self bias push pull 6L6's, 5881, KT-66, 6146 triode, 6159 triode	9,000 ohms plate to plate	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	30 watts	LS-3
LS-6L4	Push pull 6146, 6159, 6L6's fixed bias or push pull parallel 6L6's self bias	4,500 ohms plate to plate and 3,800 ohms plate to plate	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	12-50,000	55 watts	LS-3
LS-35	EL-34 in AB-feedback (see circuit pg. 25)	5,000 ohms CT 43% screen taps	4, 8, 16	7-50,000	35 watts	LS-3
LS-65	6550's in AB ₁ feedback (see circuit pg. 25)	3,300 ohms CT 40% screen taps	4, 8, 16	7-50,000	60 watts	LS-3

MODULATION TRANSFORMERS

Type No.	Primary will match typical tubes	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level	Case No.
LS-56	Push pull 2A3's, 6A5G's, 300B's, 6AS7G, 6L6, 6080	5,000 ohms plate to plate and 3,000 ohms plate to plate	6000, 5000, 4000, 1800, 1500, 1000, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	10-50,000	20 watts	LS-2
LS-691	Class B, 833A, 250TH	10,400 ohms plate to plate	4500, 4000, 3500, 2750, 2000	20-40,000	1000 watts	LS-6
LS-692	Class B push pull parallel 833A's	4,750 ohms plate to plate	2500, 2000, 1750, 1500, 1250	20-40,000	2500 watts	LS-6



LS-1 CASE

Length3 1/8"
Width2 5/8"
Height3 1/4"
Mounting1 1/8" x 2 1/8"
Screws6-32
Cutout1 7/8" dia.
Unit Weight3 lbs.

LS-2 CASE

Length4 7/8"
Width3 1/2"
Height4 3/8"
Mounting2 1/8" x 3 1/8"
Screws8-32
Cutout2 3/4" dia.
Unit Weight7.5 lbs.

LS-3 CASE

Length5 1/8"
Width5"
Height4 1/8"
Mounting4 1/8" x 5 1/8"
Screws10-24
Cutout3 3/4" dia.
Unit Weight15 lbs.



LS-6 CASE

Length15 1/4"
Width13"
Height—LS-69124"
Height—LS-69228"
Mounting Dimen.....7 3/8" x 14 1/8"
Mounting Hole3/8" dia.
Unit Weight350 lbs.
Unit Weight—LS-691.....370 lbs.
Unit Weight—LS-692.....520 lbs.



HIPERMALLOY TRANSFORMERS

The UTC Hipermalloy audio and power transformers are specifically designed for portable and compact service. While light in weight, neither dependability nor fidelity has been sacrificed. The frequency characteristic of the Hipermalloy audio units is uniform from 30 to 20,000 cycles. They incorporate a Hipermalloy nickel iron core and hum balanced coil structure. The rugged die cast case is of high conductivity alloy finished in grey, arranged for mounting with the terminals either up or down. DC in Primary shown is maximum unbalanced.

LOW IMPEDANCE TO GRID AND MIXING TRANSFORMERS

Type No.	Application	Primary Imp. (ohms)	Secondary Impedance	± 1 db from	Max. Level dbm	Unbal. DC in primary	Case No.
HA-100	Low impedance, mike, pickup, or multiple line to grid	50, 125/150, 200, 250, 333, 500/600	60,000 ohms overall, split	30-20,000	+18	.5 MA	H-1
HA-100X	Same as above but with multiple alloy shields to effect very low hum pickup				+16		H-1
HA-101	Low impedance mike, pickup, or multiple line to P.P. grids	50, 125/150, 200, 250, 333, 500/600	120,000 ohms overall, split	30-20,000	+18	.5 MA	H-1
HA-101X	As above but with multiple alloy shield to effect very low hum pickup		80,000 ohms overall, split	30-20,000	+16	.5 MA	H-1
HA-103A	Low impedance mike, pickup, or parallel mixer to grid	2.5, 5.5, 10, 15, 22, 30, 38, 60	60,000 ohms overall, split	30-20,000	+18	.5 MA	H-1
HA-108*	Mixing, low impedance mike, pickup, or multiple line	50, 125/150, 200, 250, 333, 500/600	50, 125/150, 200, 250, 333, 500/600	20-50,000	+20	.5 MA	H-1
HA-108X*	Same as above but with multiple alloy shield to effect very low hum pickup				+18		H-1
HA-130X	Three isolated lines or pads to one or two grids with tri-alloy internal shields	30, 50, 200, 250 each primary	60,000 ohms overall, split	30-20,000	+18	.5 MA	H-1

* High electrostatic shielding.

INTERSTAGE AUDIO TRANSFORMERS

Type No.	Application	Primary Imp.	Secondary Impedance	± 1 db from	Max. Level dbm	Unbal. DC in primary	Case No.
HA-104	Single plate to P.P. grids like 2A3, 6L6 (split secondary)	15,000 ohms (split)	95,000 ohms 2.5:1	30-20,000	+20	0 MA	H-1
HA-105	Single plate to single grid	15,000 ohms	60,000 ohms 2:1 turn ratio	30-20,000	+20	0	H-1
HA-106	Single plate to push pull grids (split secondary)	15,000 ohms (split)	135,000 ohms 3:1 ratio overall	30-20,000	+20	0	H-1
HA-107	Push pull plates to push pull grids (split primary and secondary)	30,000 ohms plate to plate	80,000 ohms 1.6:1 turn ratio overall	30-20,000	+28	.25 MA	H-2
HA-137	Push pull plates to push pull grids (split Pri. and Sec.)	30,000 ohms plate to plate	68,000 ohms 1.5:1 turn ratio	30-20,000	+20	0	H-1

PLATE AND CRYSTAL TO LINE TRANSFORMERS

Type No.	Application	Primary Imp.	Secondary Imp. ohms	± 1 db from	Max. Level dbm	Unbal. DC in primary	Case No.
HA-111	Crystal microphone or pickup, to multiple line	100,000 ohms (split)	50, 125/150, 200, 250, 333, 500/600	30-20,000 measured with resistive source	+18	0	H-1
HA-113	Single plate to multiple line	15,000 ohms (split)	50, 125/150, 200, 250, 333, 500/600	30-40,000	+21	0 MA	H-1
HA-133	Single plate to multiple line (D.C. in Pri.)	15,000 ohms (split)	50, 125/150, 200, 250, 333, 500/600	30-40,000	+22	8 MA	H-1
HA-114	Push pull low level plates to multiple line	30,000 ohms plate to plate	50, 125/150, 200, 250, 333, 500/600	30-40,000	+23	1 MA	H-1

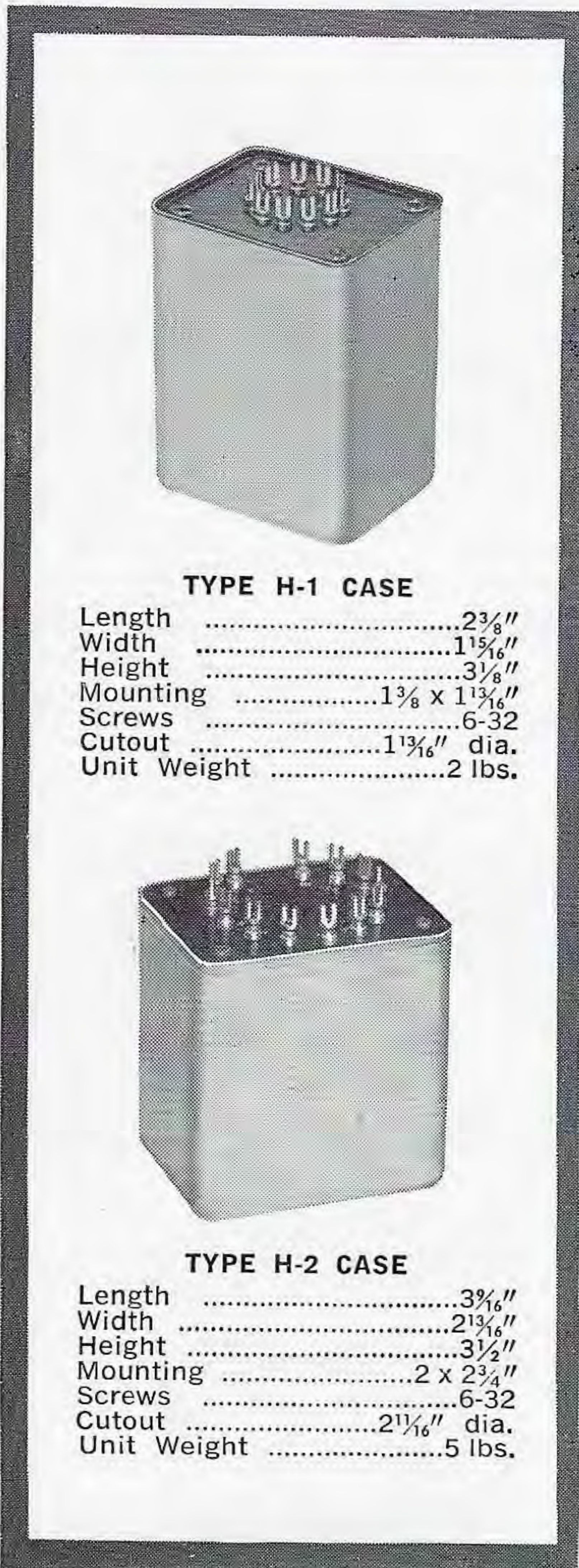
OUTPUT TRANSFORMERS

HA-134	Push pull, 6L6, or 2A3's to line	5000/9400 ohms plate to plate	50, 125/150, 200, 250, 333, 500/600	10-50,000	15 watts		H-2
HA-135	Push pull 2A3's, etc. to voice coil	3000/5000 ohms plate to plate	30, 20, 15, 10, 7.5, 5, 2.5, 1.2	10-50,000	18 watts		H-2
HA-136	5881's (KT-66's) in AB-feed back (see pg. 25 circuit)	6,600 ohms CT 43% screen taps	4, 8, 16	10-50,000	20 watts		H-2

POWER TRANSFORMERS AND CHOKES

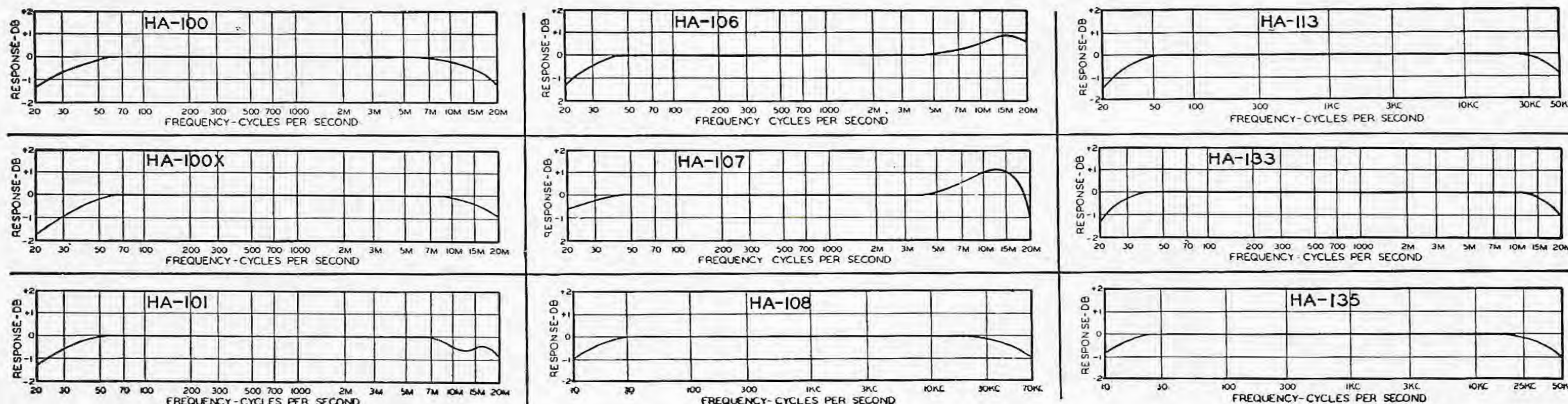
Type No.	Application	Primary Voltage 50/60 cycles	High Voltage	Filament Windings	Case No.
HP-122	Pre-amp. power supply using 6X4, 6X5GT rectifier	115	220-0-220 15 MA	6.3 V.C.T.-.6A 6.3 V.C.T.-1.2A	H-1
HP-123	Pre-amp. or tuner power supply using 6X4, 6X5GT rectifier	115	275-0-275 35 MA	6.3 V.C.T.-.6A 6.3 V.C.T.-2A	H-2

Type No.	Application	Inductance	DC Current	DC Resistance	Test Voltage	Case No.
HC-115	Parallel feed and filter choke	Series-400 Hys. Parallel-100 Hys.	2.5 MA 5 MA	6000 ohms 1500 ohms	1500	H-1
HC-116	Parallel feed and filter choke	Series-600 Hys. Parallel-150 Hys.	8 MA 16 MA	3400 ohms 850 ohms	1500	H-2
HC-117	Parallel feed and filter choke	Series-200 Hys. Parallel-40 Hys.	15 MA 35 MA	3200 ohms 800 ohms	1500	H-1



TYPE H-1 CASE
 Length2 3/8"
 Width1 1/8"
 Height3 1/8"
 Mounting1 3/8 x 1 1/8"
 Screws6-32
 Cutout1 1/8" dia.
 Unit Weight2 lbs.

TYPE H-2 CASE
 Length3 3/8"
 Width2 1/8"
 Height3 1/2"
 Mounting2 x 2 3/4"
 Screws6-32
 Cutout2 1/8" dia.
 Unit Weight5 lbs.





ULTRA COMPACT AUDIO UNITS

The UTC Ultra compact audio units are small and light in weight, ideally suited to remote amplifier and similar compact equipment. High fidelity is obtainable in all individual units, the frequency response being ± 2 db from 20 to 20,000 cycles, except where noted. Hermetic equivalents of this series (RC-50 case) are listed on page 26.

All units except those carrying DC in Primary employ a true hum balancing coil structure, which combined with a high conductivity outer case, effects good inductive shielding. The die-cast case provides for top or bottom mounting. Maximum operating level $+15$ dbm, except where noted. See page 22 for use in printed circuits.

LOW IMPEDANCE TO GRID AND MIXING TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 2 db from
A-10	Low impedance mike, pick-up, or multiple line to grid	50, 125/150, 200/250, 333, 500/600 ohms	50,000 ohms (split)	20-20,000
A-11	Low impedance mike, pick-up, or line to 1 or 2 grids ± 5 dbm	50, 200, 500	50,000 ohms CT	20-20,000
Multiple alloy shield for extremely low hum pickup				
A-12	Low impedance mike, pick-up, or multiple line to push pull grids	50, 125/150, 200/250, 333, 500/600 ohms	80,000 ohms overall, in two sections	20-20,000
A-14	Dynamic microphone to one or two grids	30 ohms	50,000 ohms overall, in two sections	20-20,000
A-20*	Mixing, low impedance mike, pickup, or multiple line to multiple line	50, 125/150, 200/250, 333, 500/600 ohms	50, 125/150, 200/250, 333, 500/600 ohms	10-50,000
A-21*	Mixing, low impedance mike, pickup, or line to line	50, 200/250, 500/600	50, 200/250, 500/600	30-30,000

Multiple alloy shield for extremely low hum pickup

* High electrostatic shielding.

INTERSTAGE AUDIO TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 2 db from
A-15	Transistor Interstage Max. level $+30$ dbm	10,000/2,500 (split) 8 MA D.C. unbal.	2,000/500 (split)	40-20,000
A-16	Single plate to single grid	15,000 ohms	60,000 ohms, 2:1 turn ratio	20-20,000
A-17	Single plate to single grid 8 MA unbalanced D.C.	As above	As above	40-20,000
A-18	Single plate to two grids. Split primary, can also be used for P.P. plates	15,000 ohms (split)	80,000 ohms overall, 2.3:1 turn ratio overall	20-20,000
A-19	Single plate to two grids 8 MA unbalanced D.C.	15,000 ohms	80,000 ohms overall, 2.3:1 turn ratio overall	40-20,000

PLATE AND CRYSTAL TO LINE TRANSFORMERS

Type	Application	Primary Impedance	Secondary Impedance	± 2 db from
A-22	Transistor to line Max. level $+30$ dbm	500 CT 20 MA D.C. unbal.	500/125 (split)	40-20,000
A-23	Transistor to voice coil Max. level $+30$ dbm	500 CT 20 MA D.C. unbal.	16/4 (split)	40-20,000
A-24	Single plate to multiple line	15,000 ohms (split)	50, 125/150, 200/250, 333, 500/600 ohms	20-40,000
A-25	Single plate to multiple line 8 MA unbalanced D.C.	15,000 ohms	50, 125/150, 200/250, 333, 500/600 ohms	40-20,000
A-26	Push pull low level plates to multiple line	30,000 ohms plate to plate	50, 125/150, 200/250, 333, 500/600 ohms	20-40,000
A-27	Crystal microphone to multiple line	100,000 ohms (split)	50, 125/150, 200/250, 333, 500/600 ohms	30-20,000 measured with noninductive source
A-28	Transistor to voice coil 5 watts level	48 CT	16, 8, 4	40-20,000
A-30	Audio choke, 250 Hys. @ 5 Ma, 6000 ohms D.C.; 65 Hys. @ 10 Ma, 1500 ohms D.C.; 450 Hys. @ 0 Ma.			
A-32	Filter choke 60 Hys. @ 15 Ma, 2000 ohms D.C.; 15 Hys. @ 30 Ma, 500 ohms D.C.			
A-33	Hipermalloy shield, slip fit over A case, provides approximately 20 db shielding... $1\frac{1}{32} \times 1\frac{1}{32} \times 2\frac{1}{32}$			

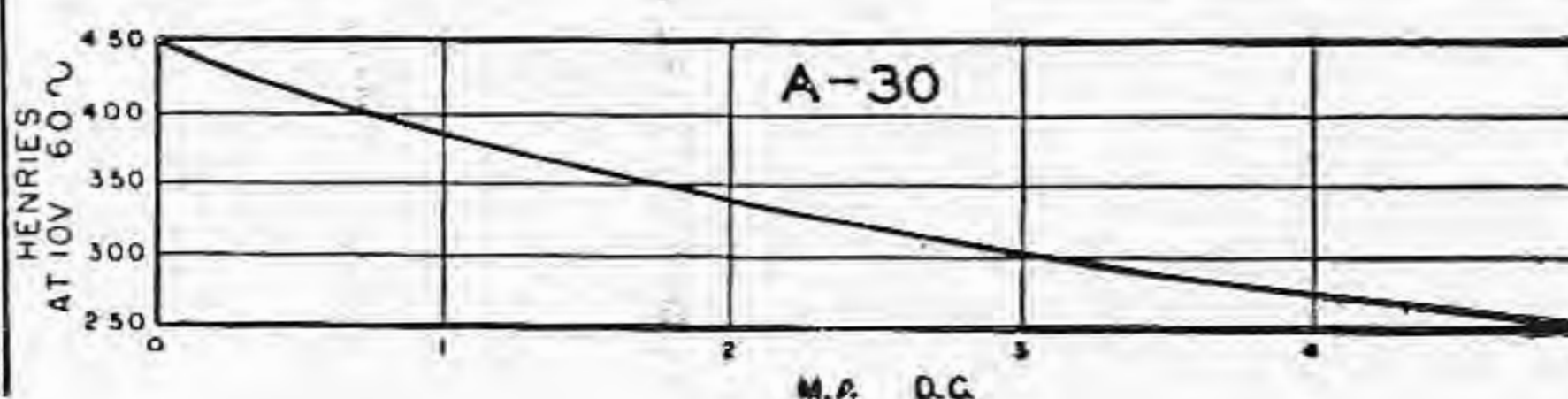
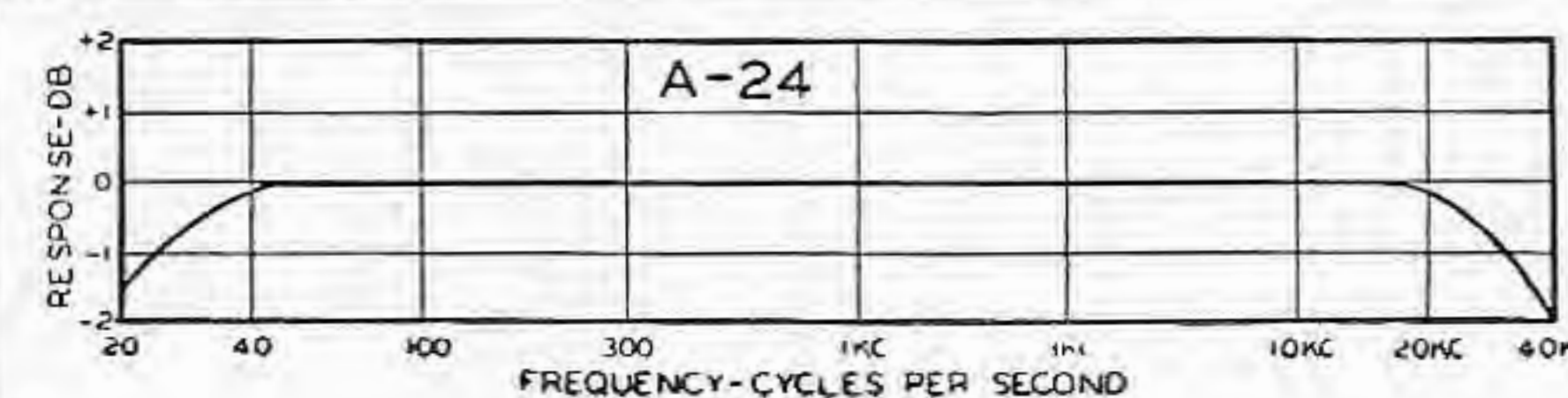
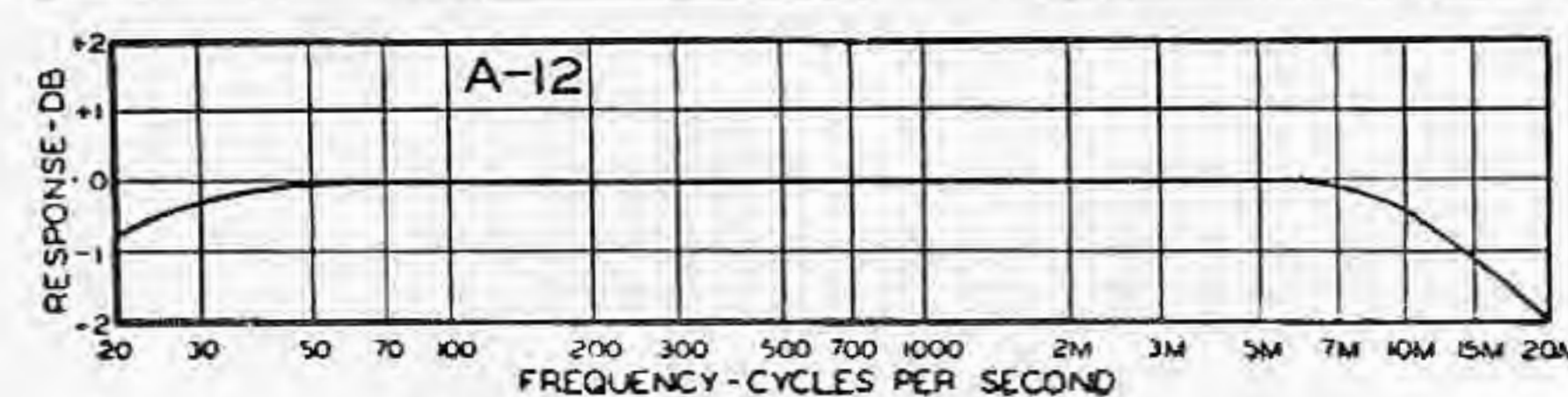
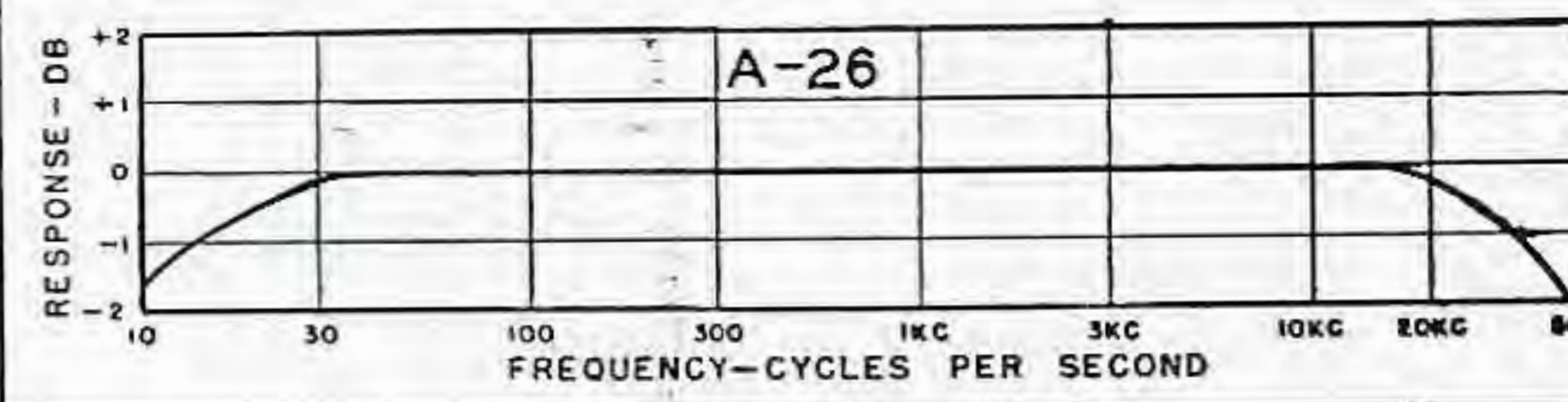
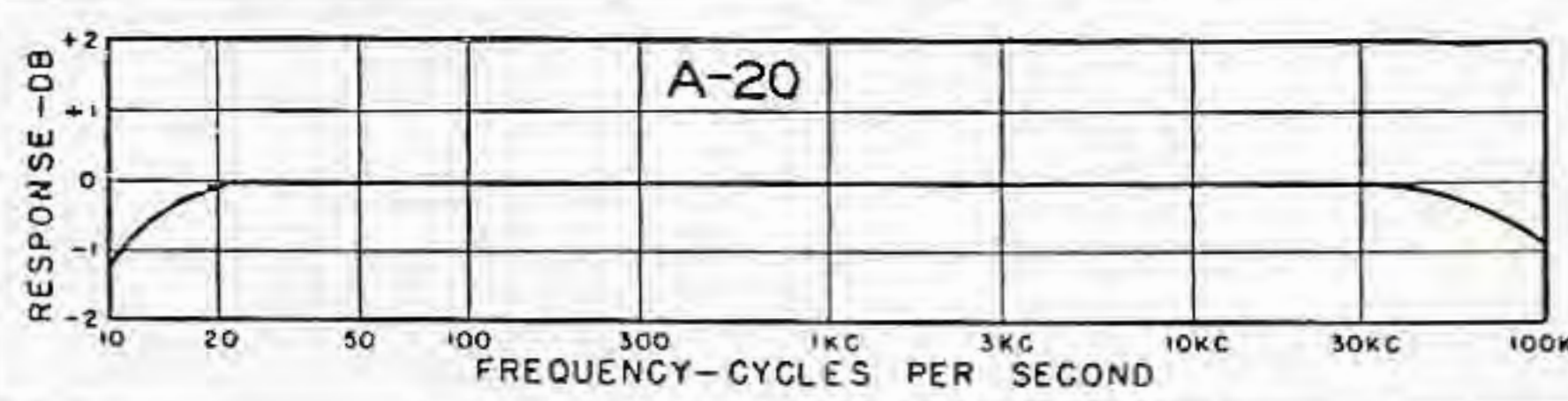
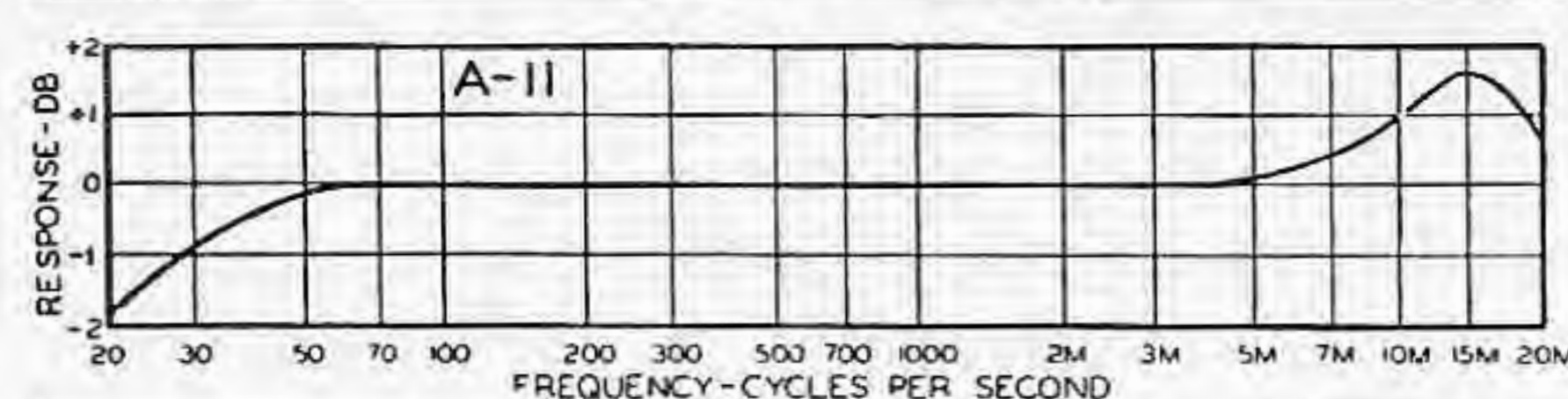
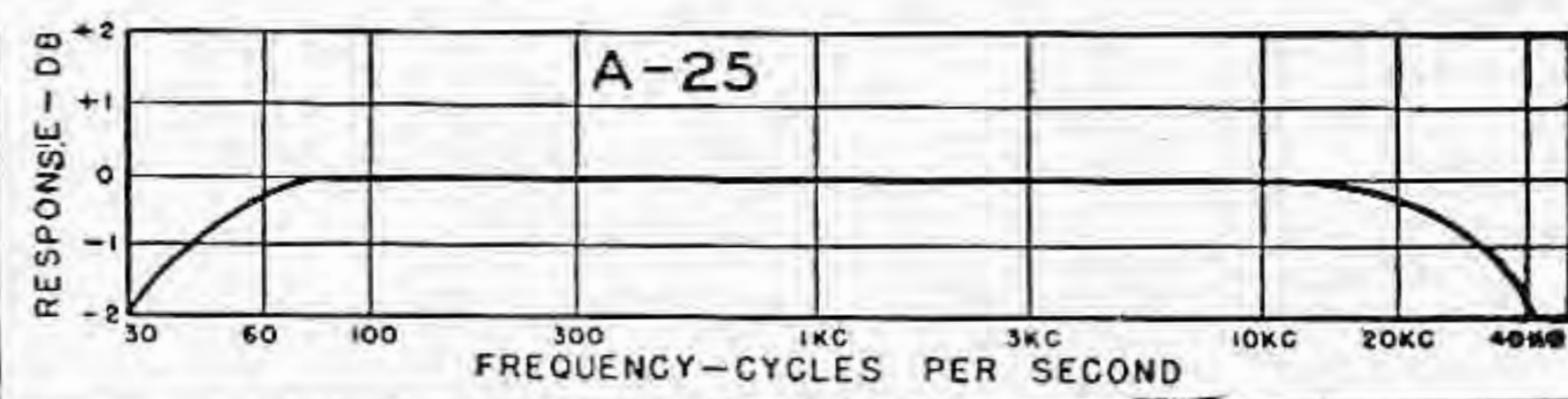
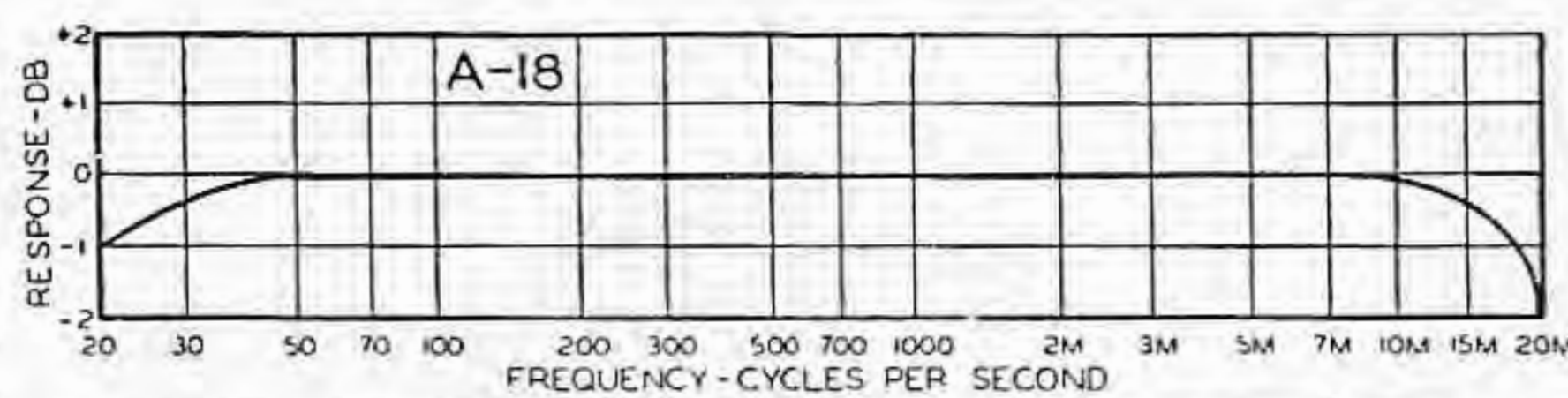
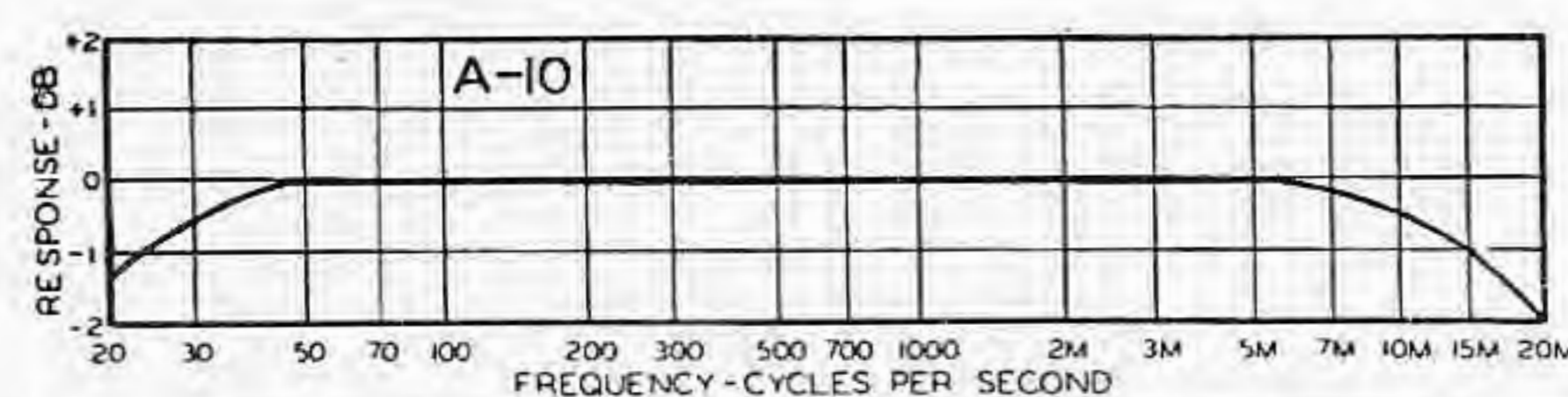


TYPE A CASE

Length $1\frac{1}{2}$ "
Width $1\frac{1}{2}$ "
Height 2"
Mounting $1\frac{1}{32}$ " sq.
Screws 4-40
Cutout $1\frac{1}{8}$ " dia.
Unit Weight $\frac{1}{2}$ lb.



A-33 SHIELD





COMMERCIAL GRADE COMPONENTS

The Commercial Grade series of transformers incorporate conservative design and rugged construction to assure dependability under continuous service operation in commercial grade equipment. These units are mounted in uniform drawn cases finished in light grey enamel, and intended for chassis mounting. All items are poured with special sealing compound in addition to vacuum impregnation of coil structures.

All audio components are linear $\pm 1\frac{1}{2}$ db from 40 to 10,000 cycles (no unbalanced D.C.), except CVL and CVM units . . . 40 to 6000 cycles. CG-134, 135 and 136 are of the hum-bucking type to assure low hum pick-up. Parallel feed low level interstage units with 50,000 ohms and .25 mfd.; 200 ohm windings on input transformers are balanced and may be used for 150 to 250 ohm circuits.

INPUT, INTERSTAGE, MIXING AND LOW LEVEL OUTPUT TRANSFORMERS

Type No.	Application	Primary Impedance Ohms	Max. Level dbm	Secondary Impedance Ohms	Case No.
CG-131	1 plate to 1 grid	15,000	+28	135,000 1:3 ratio	RC-50
CG-132	1 plate to 2 grids	15,000	+30	135,000 split 1:3 ratio overall	RC-62
CG-133	2 plate to 2 grids	30,000 P to P	+32	80,000 overall 1:1.6 ratio overall	RC-75
CG-134	Line to 1 grid hum-bucking	50, 200, 500	+30	80,000	RC-50
CG-135	Line to 2 grids hum-bucking	50, 200, 500	+30	120,000 overall	RC-50
CG-235	Line to 1 or 2 grids, hum-bucking; multiple alloy shielded for low hum pickup	50, 200, 500	+28	80,000 overall	RC-75
CG-136	Single plate and low impedance mike or line to 1 or 2 grids hum-bucking	15,000, 50, 200	+30	80,000 overall	RC-62
CG-137	Mixing	50, 200, 500	+28	50, 200, 500	RC-50
CG-140	Triode plate to line	15,000	+30	50, 200, 500	RC-50
CG-141	PP triode plates to line	30,000 P to P	+32	50, 200, 500	RC-50
CG-233	PP 6C5, 12AU7, similar triodes to AB 45's, 2A3's, 6L6's, etc.	30,000 P to P	+35	25,000 overall 1:9 ratio overall	RC-87
CG-333	PP 6C5, 12AU7, similar triodes to fixed bias 6L6's	30,000 P to P	+35	3,300 overall 1:33 ratio overall	RC-87
CG-433	PP 45, 2A3, similar tubes to fixed bias 2 or 4 6L6's	5,000 P to P	10W.	800 overall 1:4 ratio overall	RC-100

ULTRASONIC TRANSFORMERS

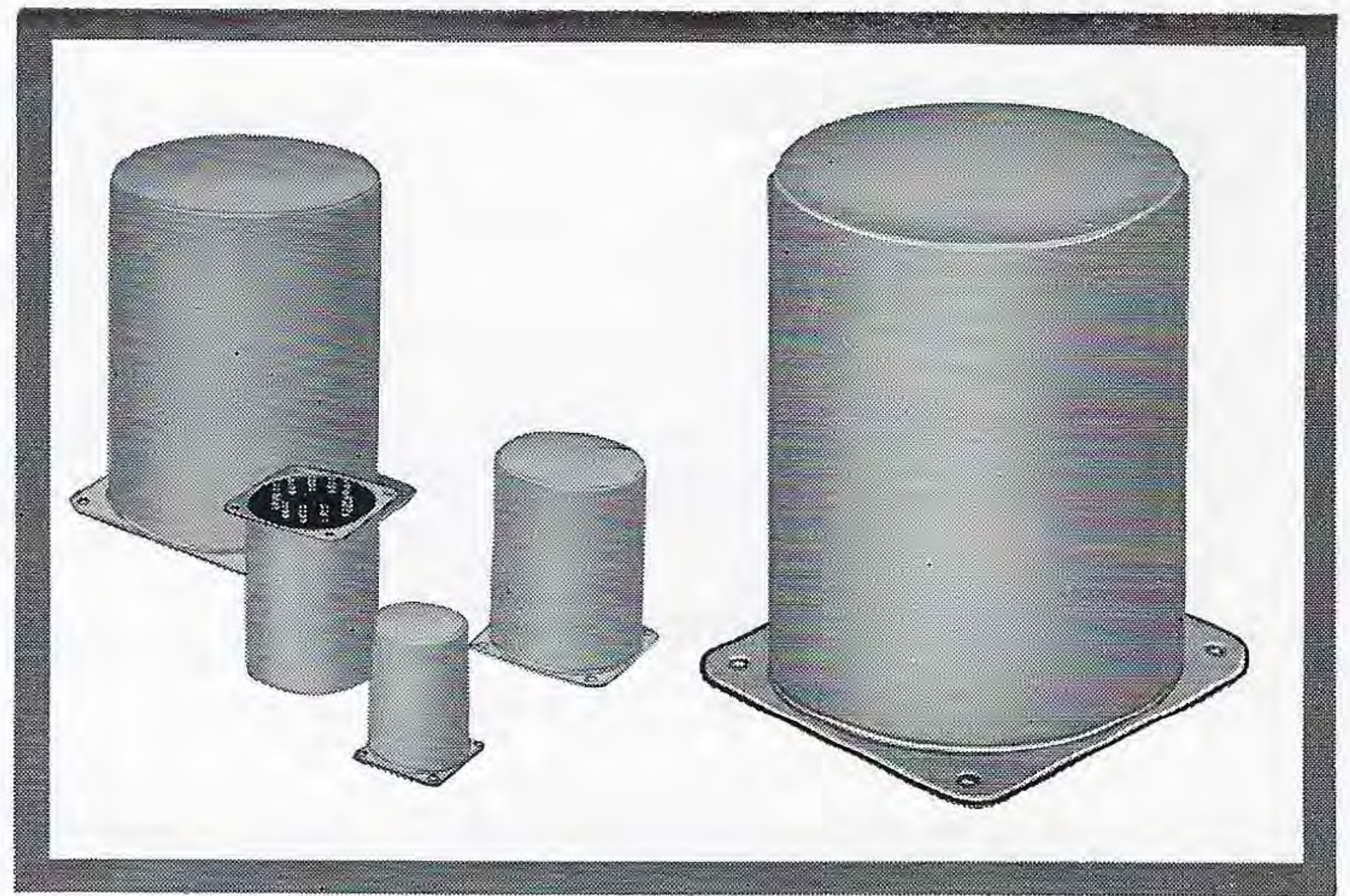
Frequency Range 10 KC to 50 KC

Type No.	Application	Pri. Imp. PP Ohms	Max. Watts	Sec. Imp. Ohms	Case No.
CGU-1	Driver, PP 5881's to PP 6156's	7000	25	4150 G-G	RC-62
CGU-2	Driver, PP 6550's to PP 5868's	5000	100	2400 G-G	RC-62
CGU-3	Output, PP 6550's	5000	100	300/170/75/18.75	RC-62
CGU-4	Output, PP 6155's, 4-125's	7200	300	300/170/75/18.75	RC-87
CGU-5	Output, PP 6155's, 4-125's	7200	300	30/17/7.5/1.88	RC-87
CGU-6	Output, PP 6156's 250TH's	4500	600	300/170/75/18.75	RC-125
CGU-7	Output, PP 6156's 250TH's	4500	600	30/17/7.5/1.88	RC-125
CGU-8	Output, PP 6156's	9200	1000	300/170/75/18.75	RC-175
CGU-9	Output, PP 5868's	10200	2000	300/170/75/18.75	5/4x5/8x8

OUTPUT TRANSFORMERS

Secondary Impedances: 500, 200, 16, 8, 5, 3, 1.5 ohms

Type No.	Imped. P. P. Ohms, Overall	Typical Tubes	Max. Watts	Case No.
CG-15	8,000	6F6 triode, 6V6, 6AQ5	20	RC-100
CG-16	3,000/5,000	2A3, 6AS7G, 6L6, 6080	20	RC-100
CG-19	6,000/10,000	6V6, Triode: 6L6, 5881	20	RC-100
CG-710	14,000/20,000	7B5, 6AK6, 6K6GT	20	RC-100
CG-2L6	9,000	6L6's, AB1, 5881	30	RC-125



COMMERCIAL GRADE CASE

Case No.	Base Dim. (Sq.)	Mounting Dim. (Sq.)	Mounting Screw	Height +1/8, -1/16	Cutout Dia.	Unit Weight Lbs.
RC-37	1 3/8	1 1/8	4-40	1 5/8	1 1/4	.35
RC-50	1 5/8	1 1/16	6-32	2 1/4	1 1/2	1/2
RC-62	1 13/16	1 1/2	6-32	2 1/2	1 1/2	1
RC-75	2 3/16	1 3/16	8-32	2 7/8	1 7/8	1 1/2
RC-87	2 1/8	2 3/32	8-32	3 1/4	2	2 1/2
RC-100	3	2 3/8	8-32	3 3/4	2 5/8	3 1/2
RC-112	3 7/16	2 11/16	10-32	4 1/8	2 7/8	5
RC-125	3 3/4	3	10-32	4 1/2	3	6 1/2
RC-150	4 1/2	3 3/16	12-28	5 1/2	3 3/4	11
RC-152	5 1/8	4 1/8	12-28	5 1/2	4	15 1/2
RC-175	5 3/4	4 7/8	1/4-20	7 1/8	4	22

FEEDBACK OUTPUT TRANSFORMERS

(See page 25 for typical circuit)

Secondary Impedances: 4, 8, 16 ohms and 70 Volt line.

Type No.	Primary Impedance	Typical Tubes	Audio Watts	Case No.
CG-20	5,000 CT, 43% screen taps	EL-34 in AB	25	RC-125
CG-21	3,300 CT, 40% screen taps	6550's in AB ₁	50	RC-150

CG VARIMATCH OUTPUTS FOR P. A.

Universal units designed to match any tubes within the rated output power, to line or voice coil. Output impedance 500, 200, 50, 16, 8, 5, 3, 1.5 ohms. Primary impedance 3000, 5000, 6000, 8,000, 10,000, 14,000 ohms, center tapped.

Type No.	Audio Watts	Typical Tubes	Case No.
CVP-1	12	2A3, 25L6, 6V6, 6AQ5	RC-100
CVP-2	30	2A3, 6L6, 6V6, 807, 5881	RC-125
CVP-3	60	300B's, 6L6's, 807, 1614, 5881, 1625	RC-150
CVP-4	125	807's, 4-6L6's, 845's, 4-1614's, 6146, 6159	RC-152
CVP-5	300	242A's, 838's, 4-845's, ZB-120's	RC-175

CG VARIMATCH LINE TO VOICE COIL TRANSFORMERS

The UTC VARIMATCH line to voice coil transformers will match any voice coil or group of voice coils to a 500 ohm line. More than 50 voice coil combinations can be obtained, as follows:

.2, .4, .5, .62, 1, 1.25, 1.5, 2, 2.5, 3, 3.3, 3.8, 4, 4.5, 5, 5.5, 6, 6.25, 6.6, 1, 7.5, 8, 9, 10, 11, 12, 14, 15, 16, 18, 20, 25, 28, 30, 31, 40, 47, 50, 63, 69, 75 ohms.

Where speakers are to be connected in groups to one transformer, it is preferable that parallel connection be used to eliminate the possibility of multiple resonance. If two speakers of different impedances are connected in parallel, the lower impedance speaker will develop greater power. If connected in series, the higher impedance speaker will develop greater power.

Type No.	Audio Watts	Primary Impedance	Secondary Impedance	Case No.
CVL-1	15	500 ohms	.2 to 75 ohms	RC-87
CVL-2	40	500 ohms	.2 to 75 ohms	RC-125
CVL-3	75	500 ohms	.2 to 75 ohms	RC-150



COMMERCIAL GRADE COMPONENTS

UTC CG power transformers, Varimatch units and chokes are designed to A.I.E.E. commercial standards. Ratings are conservative for continuous duty. Units are tested for breakdown at twice maximum working voltage plus 1000 volts and surge tested at 250% normal voltage. All items are vacuum impregnated and sealed with special insulating compound. The conservative design and manufacturing procedure of these units make them suitable for virtually all types of commercial equipment as well as ideally suited for quality amateur and public address service.

CG VARIMATCH MODULATION UNITS

Will match any modulator tubes to any RF load.

The UTC Varimatch transformer eliminates the power loss and high distortion caused by imprecise matching of RF load to a class B modulation through the use of a combination of tapped windings affording an extremely wide range in impedance matching. Designs provide that for any load impedance employed, full class C plate current can be carried by secondary winding.

Primary impedances from 500 to 20,000 ohms

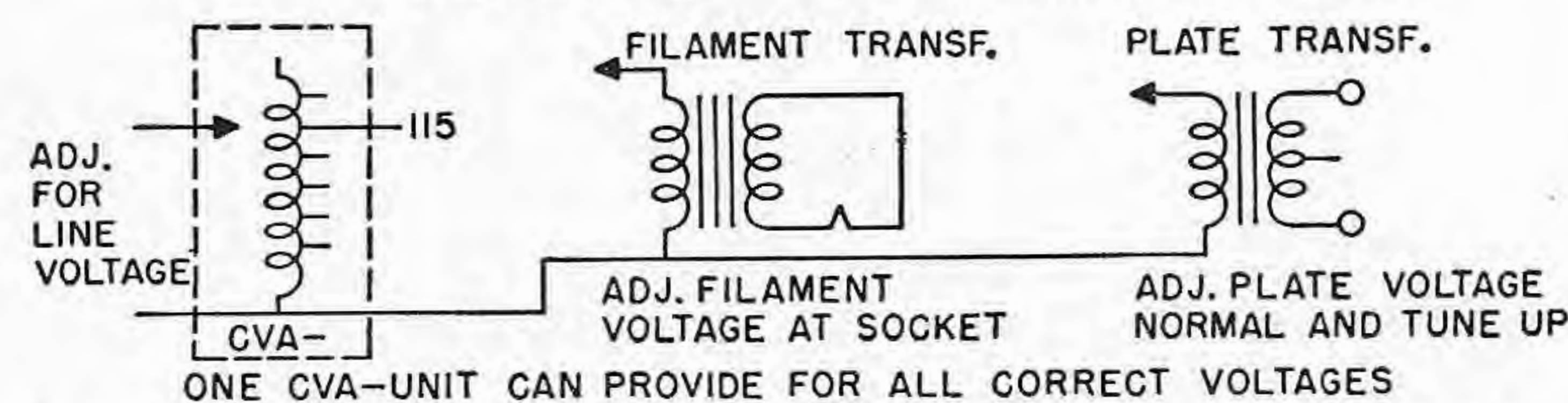
Secondary impedances from 30,000 to 300 ohms

Type No.	Max. Audio Watts	Max. Class C Input	Typical Modulator Tubes	Case No.
CVM-0	12	25	2A3	RC-100
CVM-1	30	60	6V6, 2A3, 6L6, 807, 5881	RC-125
CVM-2	60	125	801A, 6L6, 809, T-20, 1608, 6159	RC-150
CVM-3	125	250	800, 807, 845, TZ-20, RK-30, 35-T	RC-152
CVM-4	300	600	50-T, 805, 838, T-55, ZB-120, 4-65A	RC-175
CVM-5	600	1200	805, HF-300, HK-354, 250TH, 810, 4-125A	7x12x9H 60 lbs.

CG VARIMATCH DRIVER TRANSFORMERS

Type No.	Primary	Typical Output Tubes	Max. Level Watts	Case No.
CG-51AX	All single tubes like: 6C5, 6C4, 12AU7, 2A3, 5814A Ratios 2.8:1, 3.1:1, Pri. to 1/2 sec.	2A3, 6L6	5	RC-87
CG-53AX	P. P. tube like: 2A3, 6L6, Ratios 2:1, 3:1, Pri. to 1/2 sec.	841, 801A, 800, 838, 805, 50T	20	RC-112
CG-59AX	50, 200, 500 ohm line Ratios 1:1, 1.4:1, Pri. to 1/2 sec.	805, 838, ZB-120, 100TH, 800, 55T	20	RC-112

VARIPOWER AUTO-FORMERS



Type No.	Watts Output	Case No.
CVA-1	150	RC-112
CVA-2	250	RC-125
CVA-3	500	RC-150
CVA-4	1000	RC-152
CVA-5	2000	RC-175

Designed for line voltage control, filament control and reduced power operation. Output voltage from 0 to 130 volts, 50/60 cycles. Varipower units permit control of filament voltage at the tube socket to within 2 1/2 % of desired value simultaneously with line voltage control

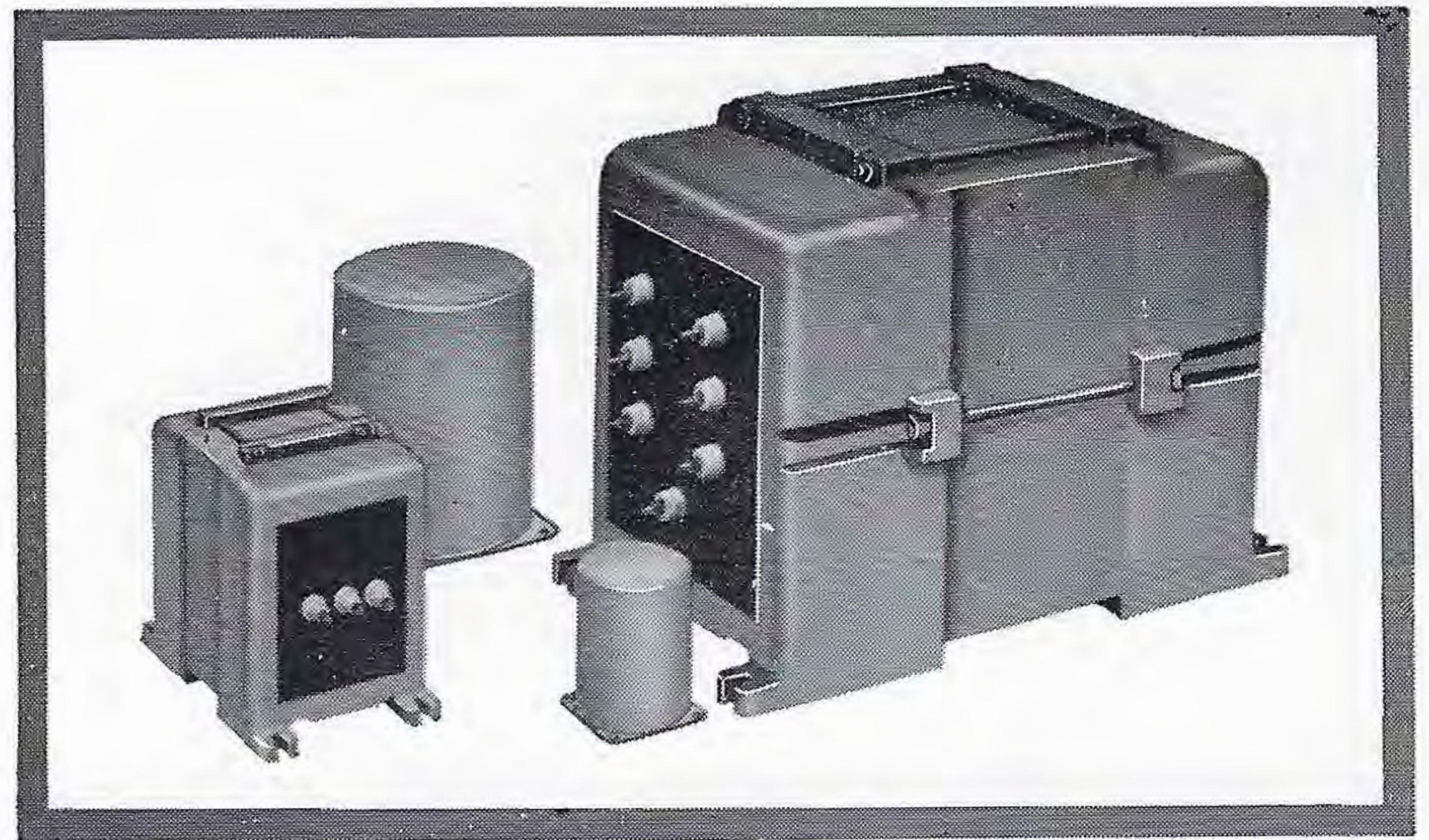
control and plate voltage control. Can be used to reduce or increase voltages on filament transformers. Taps at 25, 55, 75, 95, 100, 105, 110, 115, 120, 125 and 130 volts permit output voltages from 0 to 130 volts in 5 volt steps.

POWER AND BIAS TRANSFORMERS

Primary 115 volts 50/60 cycles

(DC MA is for choke input. Reduce to 70% for condenser input.)

Type No.	High Voltage	DC MA.	Fil. 1	Fil. 2	Fil. 3	Fil. 4	Case No.
CG-422	435-365-0-365-435 125-0-125	125 25	5V-3A	5V-2A	6.3 VCT-3A	2.5 VCT-5A	RC-150
CG-428	500-0-500 80-0-80	250 100	5V-3A	5V-2A	6.3 VCT-4A	6.3 VCT-3A, tapped 2.5 VCT-3A	RC-152
CG-429	600-525-0-525-600	250	5V-3A	6.3VCT-3-A	7.5 VCT-3A, tapped 6.3 VCT-4A		RC-152
CG-431	500-400-0-400-500 80-0-80	500 100	5V-6A	5V-2A	6.3 VCT-5A	6.3 VCT-3A	RC-175
CG-315	Tapped for any DC voltage from 15 to 100 volts within 6%—250 MA						RC-125
CG-316	Tapped for any DC voltage from 75 to 400 volts within 6%—250 MA						RC-152



CG PLATE TRANSFORMERS

Primaries for 105, 115, 220, 230 volts, 50/60 cycles. For reduced power, secondary voltages can be reduced to half by using 220V. Pri. on 110 volts. These transformers may be used on 25 to 43 cycles if 220V. Pri. is used on 110 volts; secondary voltage is simultaneously halved.

Type No.	High Voltage	DC Voltage	DC MA	Case No.
CG-300	625-515-0-515-625	500/400	200	RC-150
CG-301	580-530-300-0-300-530-580	475/425/250	420	RC-152
CG-302	950-750-0-750-950	760/610	360	RC-175
CG-303	1500-1235-400-0-400-1235-1500	1250/1000 300	260* 175	RC-175

* 300MA, if used without load on low voltage winding.

END CASTING UNITS

Type No.	High Voltage	DC Voltage	DC MA	L	W	H	Mtg. Dim.	Wt. Lbs.
CG-304	1500-1235-0-1235-1500	1250/1000	800	15	8 1/2	10 3/8	7 1/4 x 13 3/8	100
CG-305	2400-1750-0-1750-2400	2000/1500	300	10 1/2	4 3/4	6 7/8	3 7/8 x 9 3/8	50
CG-306	2400-1750-0-1750-2400	2000/1500	500	15	8 1/2	10 3/8	7 1/4 x 13 3/8	100
CG-307	3500-3000-2400-0-2400-3000-3500	3000/2500 2000	300	14 1/2	8 1/2	10 3/8	7 1/4 x 12 3/8	90
CG-308	3500-3000-2400-0-2400-3000-3500	3000/2500 2000	500	16 1/2	8 1/2	10 3/8	7 1/4 x 14 1/8	125
CG-309	3500-3000-2400-0-2400-3000-3500	3000/2500 2000	1000	21	10	13 1/4	8 1/2 x 19	185
CG-310	4600-4050-3500-0-3500-4050-4600	4000/3500 3000	600	19	10	13 1/4	8 1/2 x 16 1/4	150
CG-311	1500-1235-0-1235-1500	1250/1000	500	10 1/2	4 3/4	6 7/8	3 7/8 x 9 3/8	50
CG-312	1800-1500-0-1500-1800	1500/1250	400	10 1/2	4 3/4	6 7/8	3 7/8 x 9 3/8	50

FILTER CHOKES

Type No.	Inductance Henrys	DC MA	DC Res. Ohms	Test Volts RMS	Case No.
CG-40	10	200	110	1750	RC-112
CG-44	30	100	400	1750	RC-100
CG-45	250	15	5000	1750	RC-87
CG-48C	75	50	2200	1750	RC-87
CG-100	12	150	110	2500	RC-125
CG-102	12	250	100	3000	RC-150
CG-104	10	350	90	5000	RC-152
CG-108	10	500	52	7000	RC-175
CG-1S	10	1000	40	9000	11 1/2 x 4 3/4 x 6 7/8 H, 40 lb.

SWINGING INPUT CHOKES

INDUCTANCE SHOWN IS FROM 100% TO 10% OF RATED DC MA

Type No.	Inductance Henrys	DC MA	DC Res. Ohms	Test Volts RMS	Case No.
CG-101	25/5	150	110	2500	RC-125
CG-103	25/5	250	100	3000	RC-150
CG-105	25/5	350	90	5000	RC-152
CG-109	25/5	500	52	7000	RC-175
CG-1C	25/5	1000	40	9000	11 1/2 x 4 3/4 x 6 7/8 H, 40 lb.

FILAMENT TRANSFORMERS

Primary 105, 115, 210, 220, 230 volts, 50/60 cycles, except CG-34 . . . 105, 115, 220, 230. These transformers may be used on 25 to 43 cycles if 220 volt primary is used on 110 volts. Secondary voltage is simultaneously reduced to half.

Type No.	Sec. Volts C. T.	Sec. Amps.	Working Voltage	Test Volts RMS	Case No.
CG-33	6.3	4	500	2000	RC-75
CG-34	2.5	10	2500	6000	RC-112
CG-120	2.5	10	5000	11000	RC-125
CG-121	5	25	5000	11000	RC-150
CG-122	7.5/6.3	10	1500	4000	RC-125
CG-124	10	10	1500	4000	RC-150
CG-125	14/12/11	10	1500	4000	RC-150
CG-126	14/11/10 14/11/10	10 10	1500	4000	RC-152

Two Windings.



SPECIAL SERIES AUDIO TRANSFORMERS

UTC Special Series audio units are specifically designed for amateur and popular-priced PA service. The Special Series units are finished in a rich, light gray enamel. A recessed terminal strip is provided permitting above chassis or breadboard wiring in addition to standard chassis type wiring. The universal windings provided on driver, matching and output transformers assure a maximum of flexibility. Modulator output units will carry the DC current of the class C stage for any of the impedances available and will match practically any audio tubes to any RF load within the power rating of the transformer. Large components are housed in formed cases with top or bottom mounting. All units are vacuum impregnated—compound filled.

CLASS A INPUT TRANSFORMERS

Type No.	Application	Ratio	Case
S-1	1 plate* to 1 grid	1:3½	G-2
S-2	1 plate* to 2 grids	1:2 1:4	G-2
S-3	1 plate* to 1 or 2 grids compact type	1:4	G-1
S-5	Single or double button mike or line to 1 grid hum-bucking type	1:16	G-2
S-6	Single or double button mike or line to 1 grid, compact type	1:16	G-1

*Will match tubes like 6J5, 6C4, 12AU7, etc. Can be used with high mu triodes with loss in low frequencies. Pri. DC to 8 MA.

UNIVERSAL DRIVER TRANSFORMERS

(See Modulator chart for tube types, ratios are Pri. to ½ sec.)

Type No.	Application	Max. Watts	Case
S-8	Single driver plate to pushpull grids, 2.66:1, 5:1 ratios. Pri. DC to 45 MA.	5	G-3
S-9	Pushpull driver plates to grids of class B tubes up to 400 watts output, 2.25:1, 3.6:1, 5:1 ratios	20	G-4
S-10	12AU7 or similar plates to 5881 or 6L6's, self or fixed bias, 2.25:1 ratio	5	G-3

MATCHING TRANSFORMERS

Type No.	Application	Pri. Ohms	Sec. Ohms	Case
S-11	Single 6J5, 6C4, 12AU7* or similar tube to line	15,000	200/500	G-2
S-12	Line to speaker 15 watts	500, 2000, 4000	2, 4, 8, 15	G-2
S-13	Line to speaker 30 watts	500, 2000, 4000	2, 4, 8, 15	G-4

UNIVERSAL OUTPUT TRANSFORMERS TO LINE AND VOICE COIL

(Secondary Impedances: 500, 15, 8, 2 ohms)

(Secondary impedances: 500, 15, 6, 2 ohms)

Type No.	Max. Watts	Primary Impedance	Typcial Tubes	Class	Case
Single Tubes:					
S-14 10 W.	2500 ohms	35L6GTG, 6V6, 12A6, 6AC5	A	G-2	
	4000 ohms	2A3, 6B4, 6L6, 6Y6, 25L6GT	A		
	7000 ohms	6F6, 7B5, 6K6GT, 1G5, 3C5	A		
	10,000 ohms	6A4, 6N7	A		
P. P. Tubes:					
S-15 12 W.	4000 ohms	6Y6, 25L6GT	AB	G-2	
	5000 ohms	2A3, 6AS7G	AB		
	10,000 ohms	6080	B		
S-16 30 W.	3000 ohms	2A3, 25L6GT	AB	G-4	
	6000 ohms	6F6 triodes, 6AS7G	AB		
	9000/10000 ohms	2A5, 6F6, 6L6, 6V6, 807-triode	AB		
S-17 55 W.	3800 ohms	6L6's	AB2	G-5	
	4500/5000 ohms	4—6L6's	AB1		
		809, 6146	B		

UNIVERSAL MODULATION TRANSFORMERS

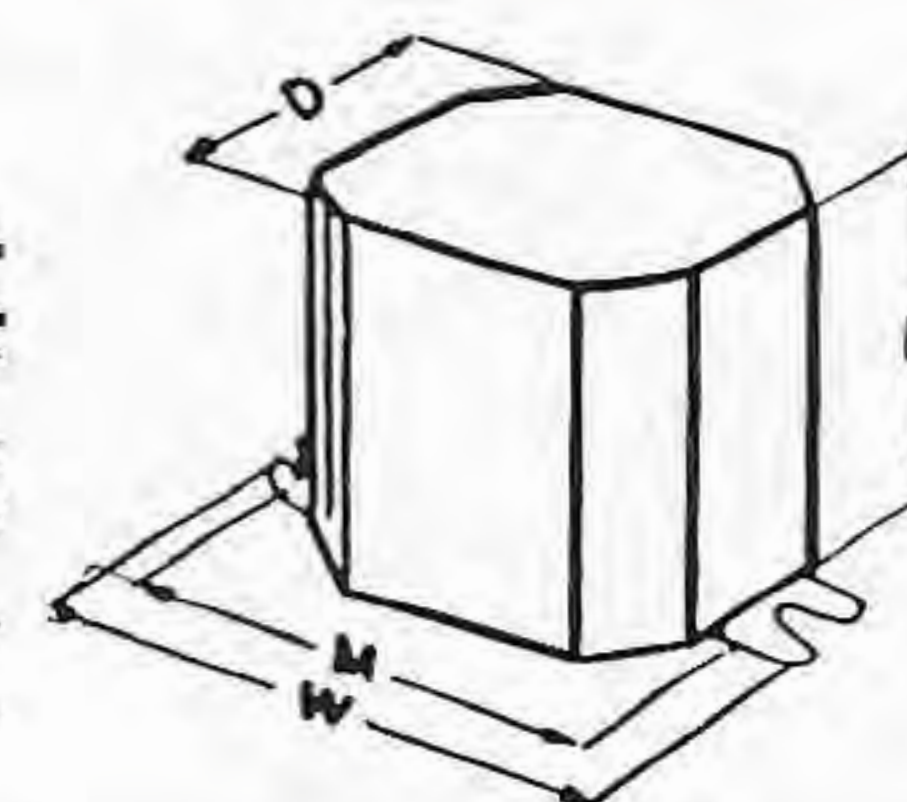
(Secondary carries class C current)
Any modulator tubes to any RF load. (See chart)

Type No.	Audio Power	Case
S-18	12 watts	G-3
S-19	30 watts	G-4
S-20	55 watts	G-5
S-21	110 watts	G-7
S-22	250 watts	G-9



CASE SIZES

Type No.	H	W	D	M	Wt. Lbs.
G-1	1⅞	2⅜	1¾	2⅜	1
G-2	2⅝	3⅜	1⅝	2⅞	1½
G-3	2½	3¾	2⅝	3¼	2
G-4	2⅝	4⅞	2⅝	3⅝	3



TYPICAL MODULATOR COMBINATIONS

S-18—12 WATTS MAX.

Typical driver tubes: 6C4, 12AU7, 6J5, 6J7-TR, 6CG7, 6SN7GT.

DRIVER	Sec. Term.	P. P. Tubes	Watts Output	P. P. Load	Plate Volts	Bias Volts
S-2	G-G	6E6	1.6	14,000	250	27
S-2	G-G	25L6GT	4	4,000	110	7.5
S-2	G-G	6Y6G	7	4,000	135	13.5
S-8	G'-G'	6AC5G	8	10,000	250	0
S-2	G-G	2A3	10	5,000	325	750 ohms
S-2	G-G	6AS7G	10	5,000	250	1,250 ohms
S-1	F-G	6V6, 6AQ5		6,000		
S-1	F-G	6K6		10,000		

S-19—30 WATTS MAX.

Tube or Tubes	DRIVER Transf.	Sec. Terms.	P. P. Tubes	Watts Output	P. P. Load	Plate Volts	Bias Volts
6C4	S-10	G-G	6V6	13	8,000	300	20
6C4	S-10	G-G	2A3, 6A3,	15	3,000	325	68
6C4	S-10	G-G	6F6, 6AQ5 Pentode AB	10	10,000	375	340 ohms
6AQ5	S-8	G-G	6F6 triode AB	18	6,000	350	38
45	S-8	G-G	10, 1602	25	8,000	425	50
45	S-8	G'-G'	46	25	6,000	425	0
45	S-8	G'-G'	841	28	7,000	425	5
6C4	S-10	G-G	6L6 self bias	30	9,000	400	23

S-50—55 WATTS MAX.

P. P. Tubes	DRIVER Transf.	Sec. Terms.	P. P. Tubes	Watts Output	P. P. Load	Plate Volts	Plate Tr'sf.	Bias Volts	Bias Tr'sf.
2A3	S-9	1-1	801A	45	10000	600	S-45	75	S-51
2A3	S-9	1-1	T-20	50	8000	600	S-45	30	S-51
12AU7	S-9	2-2	2E26	54	8000	500	S-41	15	S-51
12AU7	S-10	G-G	6L6, AB2	60	3800	400	S-39	25	S-51
12AU7	S-10	G-G	4-6L6	60	4500	400	S-40	23	S-51
2A3	S-9	3-3	809	60	5000	500	S-41	0	

S-21—115 WATTS MAX.

P. P. -2A3 Driver S-9 Transf.	P. P. Tubes	Watts Output	P. P. Load	Plate Volts	Plate Transf.	Bias Volts	Bias Tr'sf.
2-2	TZ-20	70	12000	800	S-46	0	
1-1	T-20	70	12000	800	S-46	40	S-51
*	845	75	4600	1000	S-47	175	S-52
1-1	807	80	6600	600	S-45	30	S-51
2-2	6146	95	6000	600	S-46	50	S-51
1-1	800, RK-30	100	12000	1000	S-47	55	S-51
3-3	809	100	8400	750	S-45	5	S-51
2-2	825	100	6600	850	S-46	30	S-51
2-2	TZ-40	100	6000	750	S-45	0	
2-2	T-756	100	7000	850	S-46	30	S-51
1-1	50-T	100	8000	1000	S-47	90	S-51
2-2	RK-18	100	12000	1000	S-47	50	S-51
1-1	HK-354	100	15000	1000	S-47	60	S-51
*	845	105	8800	1250	S-47	225	S-52
3-3	RK-31	110	14000	1000	S-47	0	
1-1	4-6L6	110	2000	400	S-44	25	S-51
2-2	35-T	115	11000	1000	S-47	30	S-51

* Reverse S-9 transformer using terminals 1-1 for plates and P. P. for grids.



SPECIAL SERIES POWER EQUIPMENT

UTC Special Series power supply components are designed specifically for amateur and popular-priced PA service. The ratings are based on such applications and recommended for ICAS intermittent use. For commercial application, CG or H grade components should be employed. Tapped coil structures on power and bias supply transformers afford maximum flexibility, permitting a given transformer to be used with many circuits and types of tubes. Stand by service should not be obtained by interrupting high voltage center tap.

S-22—250 WATTS MAX. MODULATOR STAGE

P. P.-2A3 Driver S-9 Transf. Sec. Term.	P. P. Tubes	Watts Output	P. P. Load	Plate Volts	Plate Transf.	Bias Volts	Bias Transf.
3-3	RK-31	140	17000	1250	S-47	0	
*	50 T	250	20000	2000	S-50	180	S-52
*	50 T	160	17000	1500	S-49	140	S-52
2-2	TZ-40	175	6800	1000	S-47	0	
1-1	T-55	175	6900	1000	S-47	40	S-51
1-1	T-55	225	9400	1250	S-47	50	S-51
2-2	HF-100	250	12000	1500	S-49	52	S-51
2-2	100 TH	250	7200	1250	S-47	0	
¶	100 TL	230	7200	1250	S-47	112	S-52
2-2	ZB-120	150	4800	750	S-45	0	
2-2	ZB-120	245	9000	1250	S-47	0	
*	HK-154	225	11400	1250	S-47	210	S-52
1-1	203 A	250	9000	1250	S-47	45	S-51
3-3	203 Z	200	6900	1000	S-47	0	
1-1	211	200	6900	1000	S-47	77	S-51
1-1	211	250	9000	1250	S-47	100	S-51
1-1	HK-354	220	15000	1500	S-49	100	S-51
2-2	838	190	12700	1250	S-47	15	S-51
2-2	830 B	175	7600	1000	S-47	35	S-51
2-2	838	250	9000	1250	S-47	0	

* Reverse S-9, using 2-2 for plates and P-P for grids.
¶ Reverse S-9, using 1-1 for plates and P-P for grids.

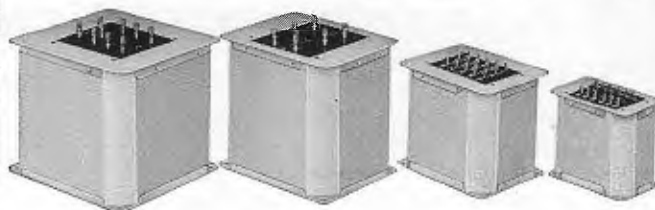
FILTER, SWINGING, AND AUDIO CHOKES

Type No.	Service	Inductance	Current	Resistance	Test Volts Rms	Case No.
S-23	Audio	300 Hy.	5 Ma.	5000 ohms	1500 V.	G-2
S-24	P. P. Choke	500 Hy. C. T.	3 Ma.	6000 ohms	1500 V.	G-2
S-25	Filter	30 Hy.	30 Ma.	800 ohms	1500 V.	G-2
S-26	Filter	12 Hy.	60 Ma.	250 ohms	1500 V.	G-2
S-27	Filter	25 Hy.	75 Ma.	350 ohms	1500 V.	G-4
S-28	Filter	20 Hy.	100 Ma.	350 ohms	1500 V.	G-4
S-29	Filter	6 Hy.	175 Ma.	90 ohms	1500 V.	G-4
S-30	Swinging	20/4 Hy.	175 Ma.	90 ohms	1500 V.	G-4
S-31	Filter	6 Hy.	225 Ma.	100 ohms	2700 V.	G-5
S-32	Swinging	20/4 Hy.	225 Ma.	100 ohms	2700 V.	G-5
S-33	Filter	8 Hy.	300 Ma.	100 ohms	4000 V.	G-7
S-34	Swinging	20/4 Hy.	300 Ma.	100 ohms	4000 V.	G-7
S-35	Filter	8 Hy.	400 Ma.	60 ohms	5000 V.	G-8
S-36	Swinging	20/4 Hy.	400 Ma.	60 ohms	5000 V.	G-8
S-37	Filter	8 Hy.	550 Ma.	60 ohms	6000 V.	G-8
S-38	Swinging	20/4 Hy.	550 Ma.	60 ohms	6000 V.	G-8

COMBINED PLATE AND FILAMENT UNITS

Type No.	Voltage	Primary 115 V.—50/60 Cycles				Case No.
		Voltagess* D. C.	Fil. Rectifier	Fil. No. 1	Fil. No. 2	
S-39	490-400-0-400-490 175 Ma.	400/310	5 V.-3A	2.5 V.C.T. -6A	6.3 V.C.T. 4A	G-7
S-40	525-425-0-425-525 250 Ma.	400/310	5 V.-3A	6.3 V.C.T. -3A	6.3 V.C.T. 3A	G-7
S-41	600-0-600 200 Ma.	475	5 V.-3A	7.5 V. tapped 6.3 V.-3A	6.3 V.C.T. 2A	G-7
S-42	600-525-0-525-600 300 Ma.	480/400	5 V.-6A	7.5 V. tapped 6.3 V. 3A	6.3 V.C.T. 3A	G-8
S-43	525-0-525 450 Ma. 40-0-40 200 Ma.	400	5 V.-3A 5 V.-6A	6.3 V. 2A	6.3 V.C.T. 5A	G-9

* Based on two section filter, choke input.



CASE SIZES
(Will take 12-28 Mtg. Screw)

Type No.	H	W	D	M	N	Wt. Lbs.
G-5	3 $\frac{3}{4}$	3 $\frac{1}{8}$	4 $\frac{1}{2}$	3 $\frac{7}{8}$	2 $\frac{7}{16}$	4 $\frac{1}{2}$
G-7	4 $\frac{5}{8}$	4 $\frac{5}{8}$	5 $\frac{1}{2}$	4 $\frac{7}{8}$	3 $\frac{3}{4}$	8
G-8	4 $\frac{5}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	4 $\frac{7}{8}$	4 $\frac{3}{4}$	12
G-9	5 $\frac{7}{8}$	5 $\frac{3}{8}$	6 $\frac{3}{4}$	6 $\frac{3}{4}$	4 $\frac{1}{2}$	21
G-10	5 $\frac{7}{8}$	6 $\frac{3}{8}$	6 $\frac{3}{8}$	5 $\frac{1}{4}$	5 $\frac{1}{2}$	24
G-11	5 $\frac{7}{8}$	6 $\frac{1}{2}$	7 $\frac{3}{8}$	6 $\frac{3}{4}$	5 $\frac{3}{4}$	31
G-12	10 $\frac{1}{4}$	7 $\frac{3}{8}$	9 $\frac{1}{4}$	8 $\frac{1}{2}$	6 $\frac{3}{8}$	52

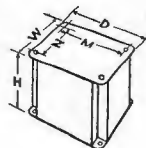


PLATE TRANSFORMERS — BIAS TRANSFORMERS

Primary 115 V.—50/60 Cycles

Type No.	High Voltage	DC Voltages*	DC Current	Case No.
S-44	575-525-0-525-575	470/430	500 Ma.	G-9
S-45	900-750-0-750-900	750/620	200 Ma.	G-8
S-46	1000-750-0-750-1000	825/600	300 Ma.	G-9
S-47	1500-1250-1000-0-1000-1250-1500	1275/1050/825	300 Ma.	G-10
S-48	1500-1250-1000-0-1000-1250-1500	1300/1075/850	500 Ma.	G-11
S-49	2100-1800-1500-0-1500-1800-2100	1815/1540/1275	300 Ma.	G-11
S-50	3000-2500-0-2500-3000	2625/2175	300 Ma.	G-12
S-51	Will supply any bias voltage from 15 to 100 volts DC within approximately 6% of desired value.		200 Ma.	G-5
S-52	Will supply any bias voltage from 75 to 400 volts DC within approximately 6% of desired value.		200 Ma.	G-7

* Based on two section filter for 200 Ma. and 300 Ma units, single section filter for 500 Ma. units, both choke input.

FILAMENT TRANSFORMERS

Primary Tapped 105, 115 Volts—50/60 Cycles

Type No.	Secondary Volts	Secondary Current	Test Volts Rms	Case No.
S-53	2.5 VCT	10 A.	1500 V.	G-3
S-54	5 VCT	4 A.	2500 V.	G-3
S-55	6.3 VCT	3 A.	1500 V.	G-3
S-57	2.5 VCT	10 A.	10,000 V.	G-5
S-58	2.5 VCT	20 A.	10,000 V.	G-5
S-59	5 to 5.25 VCT	13 A.	5000 V.	G-5
S-60	5 to 5.25 VCT	22 A.	10,000 V.	G-7
S-61	7.5 VCT tapped 6.3 VCT	10 A.	3000 V.	G-5
S-62	10 VCT	10 A.	3000 V.	G-5
S-63	14 VCT tapped 12 VCT and 11 VCT	10 A.	5000 V.	G-7

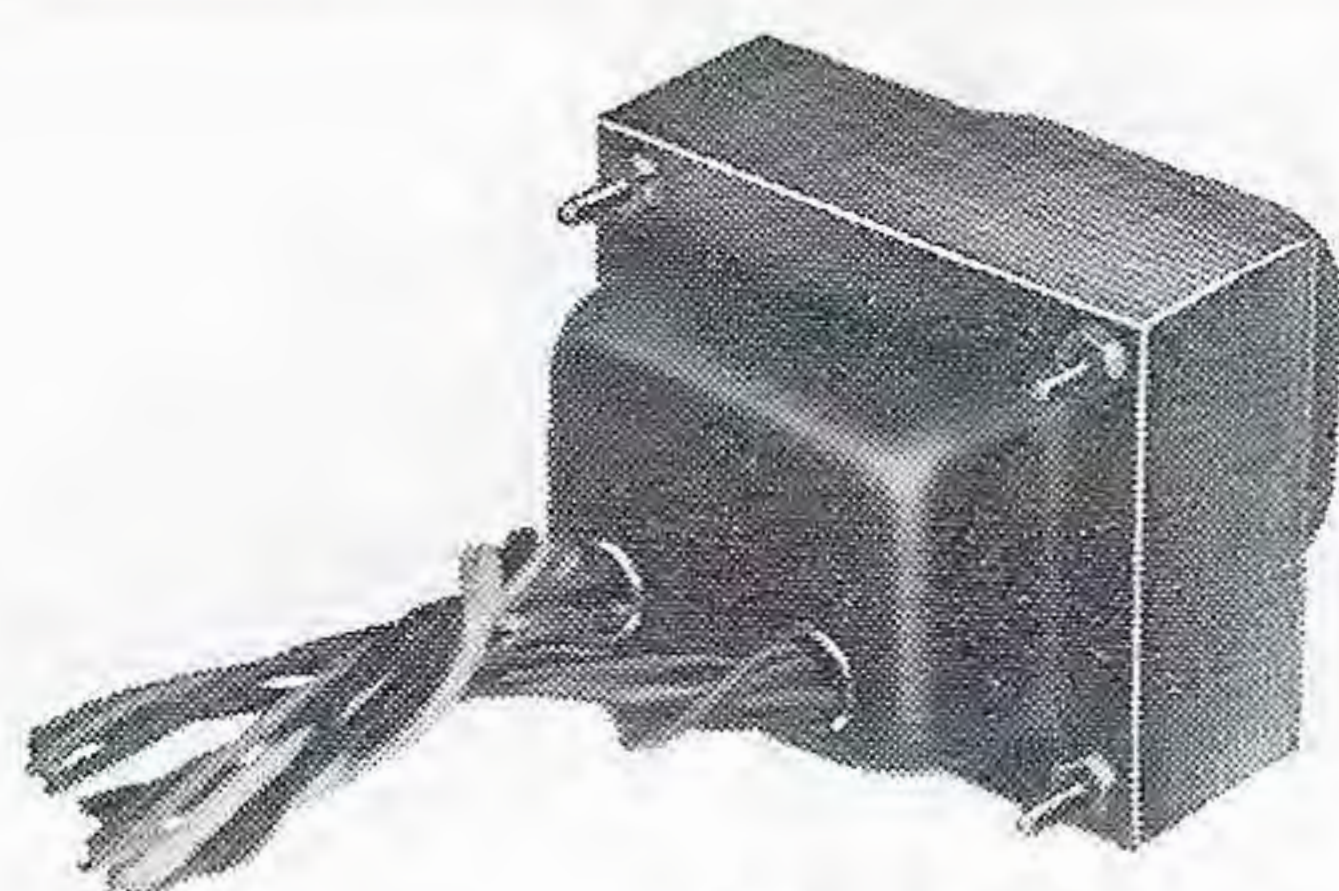
Type No.	Fil. 1	Fil. 2	Fil. 3	Test Volts	Case No.
S-64	2.5 VCT-5A	2.5 VCT-5A	5 VCT-6A	3000 V.	G-5
S-65	2.5 VCT-5A	5 VCT-4A	6.3 VCT-3A	3000 V.	G-5
S-67	5 VCT-6A	6.3 VCT-5A		3000 V.	G-5
S-68	5 VCT-3A	6.3 VCT-4A	7.5 VCT-5A	3000 V.	G-5
S-70	6.3 VCT-5A	6.3 VCT-5A		3000 V.	G-5
S-71	2.5 VCT-6A	2.5 VCT-6A	2.5 VCT-12A	10000 V.	G-7
S-72	5 VCT-3A	5 VCT-3A	5 VCT-6A	5000 V.	G-5



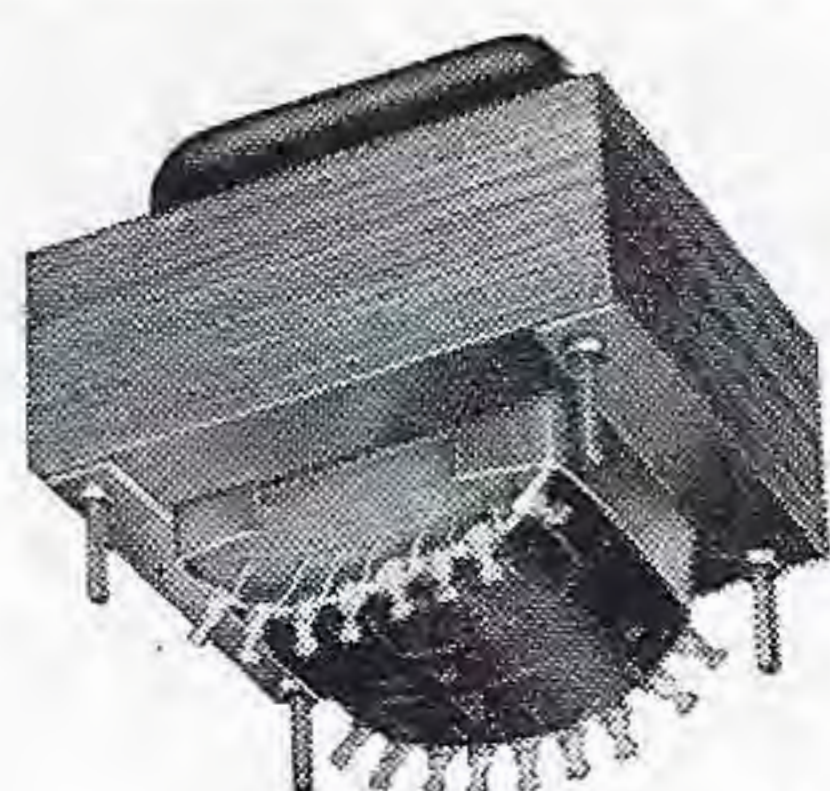
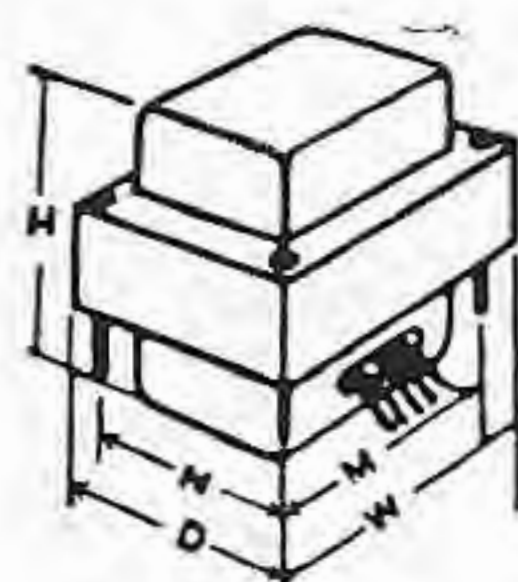
REPLACEMENT TYPE COMPONENTS

UTC replacement type transformers (Pri. 117 V. 50/60 cycles) provide the highest reliability in this field. All units are low temperature rise, vacuum sealed against humidity with special

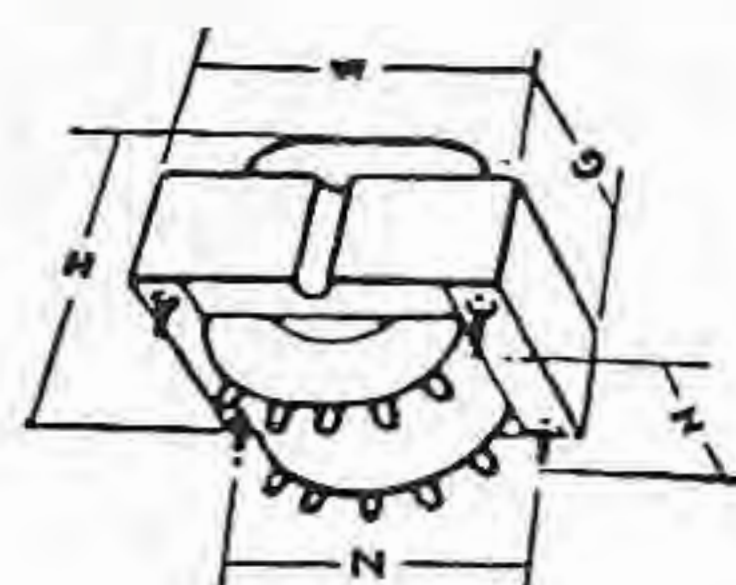
impregnating materials to prevent corrosion and electrolysis. Shells are finished in attractive high lustre black enamel.



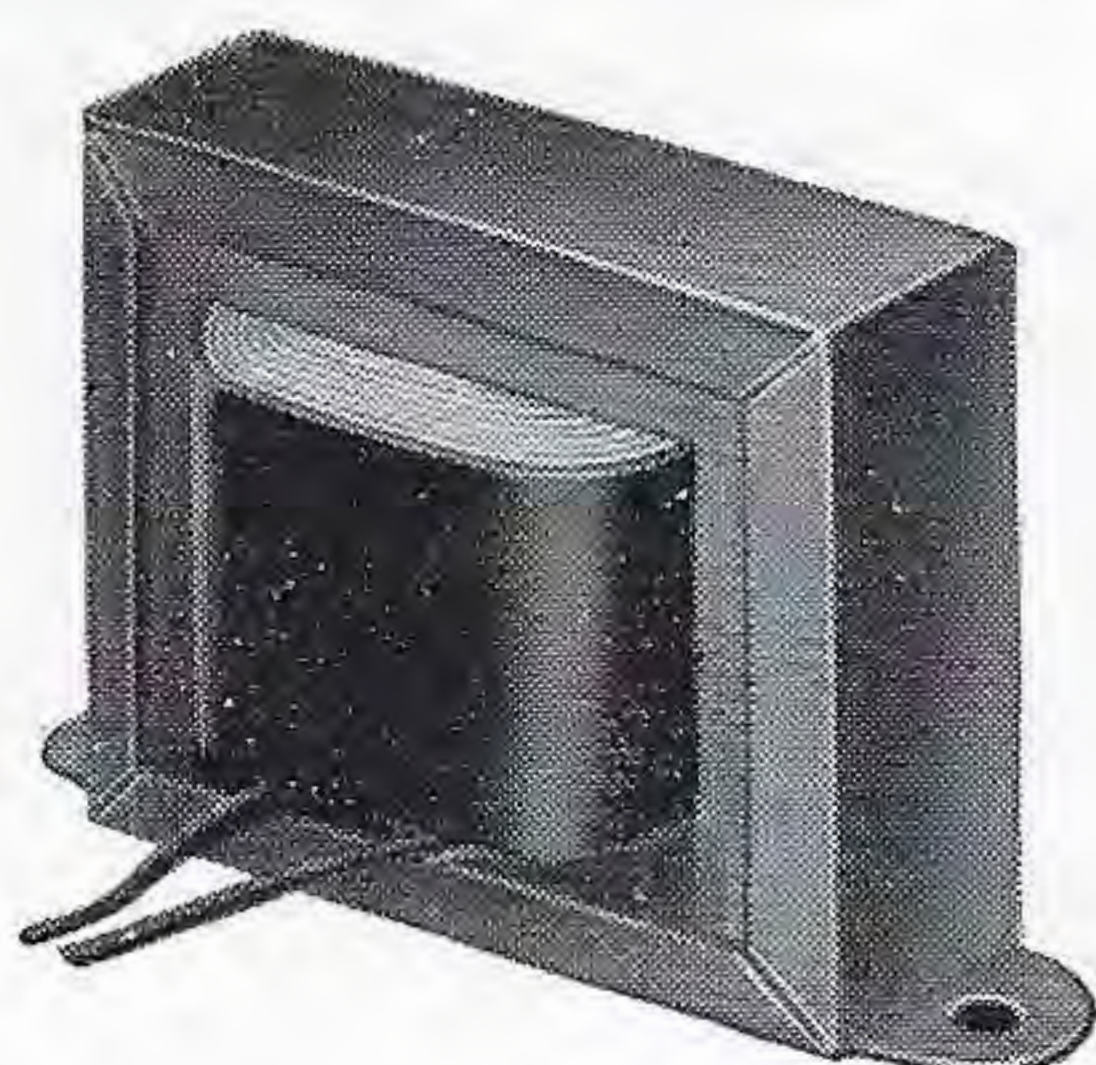
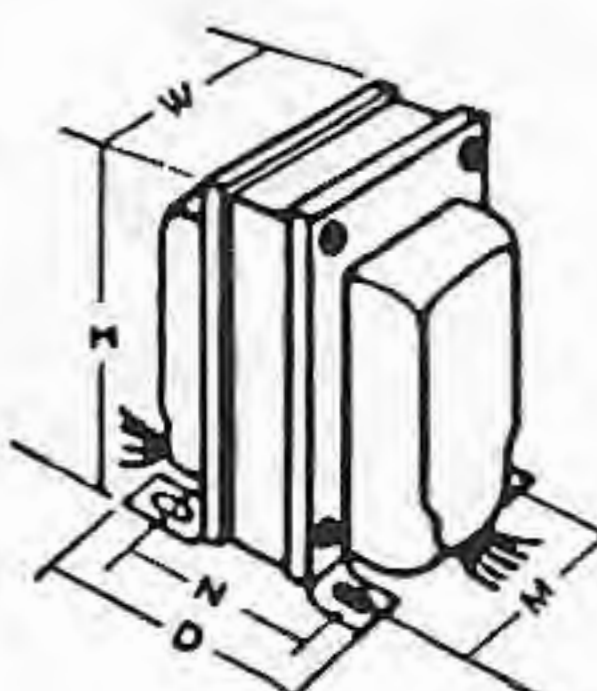
DOUBLE SHELL TYPE



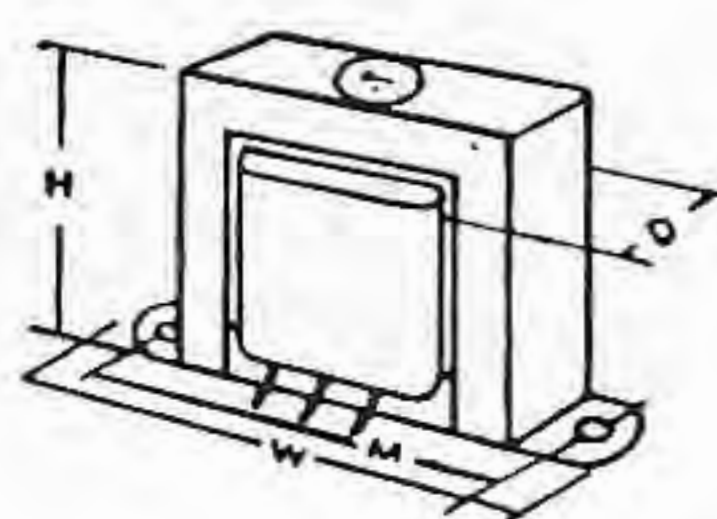
SINGLE SHELL TYPE



VERTICAL SHELL TYPE



CHANNEL FRAME TYPE



CHANNEL FRAME AUDIO TRANSFORMERS

Type No.	Application	Description	W	Dim., Ins.	H	M	Wt. Lbs.
R-34	1 plate 8 Ma to 2 grids	4:1 ratio	2 ⁷ / ₈	1 ³ / ₈	1 ¹¹ / ₁₆	2 ³ / ₈	³ / ₄
R-35	Mike to 1 grid	17:1 ratio to Pri. C.T.	2 ⁷ / ₈	1 ³ / ₈	1 ¹¹ / ₁₆	2 ³ / ₈	³ / ₄
R-58	5 watt Universal output	Any single tube to any voice coil, .1 to 30 ohms	2 ¹ / ₂	1 ³ / ₈	1 ³ / ₈	2 ¹ / ₈	¹ / ₂
R-38A	6 watt Universal	Any tubes up to 6 watts to any voice coil, .1 to 30 ohms	2 ¹ / ₂	1 ³ / ₈	1 ³ / ₈	2 ¹ / ₈	¹ / ₂
R-59	10 watt Universal	Any tubes up to 10 watts to any voice coil, .1 to 30 ohms	2 ⁷ / ₈	1 ¹ / ₆	1 ¹¹ / ₁₆	2 ³ / ₈	¹ / ₂
R-60	15 watt Universal	Any tubes up to 15 watts to any voice coil, .1 to 30 ohms	3 ⁵ / ₁₆	1 ³ / ₄	2	2 ¹³ / ₁₆	1
R-39	10 watt line Matching Transformer	250, 500, 1500 ohms to 2, 8, 15 ohms	2 ⁷ / ₈	1 ¹ / ₆	1 ¹¹ / ₁₆	2 ³ / ₈	³ / ₄

DOUBLE SHELL POWER TRANSFORMERS

Type No.	High V.	DC MA.	Rec. Fil.	Amp. Fil.	W	D	H	M	N	Wt. Lbs.
R-101	275-0-275	50	5V-2A.	6.3 VCT-2.7A	3	2 ¹ / ₂	3	2 ¹ / ₂	2 ¹ / ₁₆	2 ¹ / ₂
R-102	350-0-350	70	5V-3A.	6.3 VCT-3A	3	2 ¹ / ₂	3 ⁵ / ₈	2 ¹ / ₂	2 ¹ / ₁₆	3 ¹ / ₂
R-103	350-0-350	90	5V-3A.	6.3 VCT-3.5A	3 ³ / ₈	2 ⁷ / ₈	3 ¹ / ₁₆	2 ¹ / ₁₆	2 ¹ / ₄	4 ¹ / ₂
R-104	350-0-350	120	5V-3A.	6.3 VCT-5A	3 ³ / ₄	3 ¹ / ₈	3 ³ / ₈	3 ³ / ₈	2 ¹ / ₂	5 ¹ / ₂
R-105	385-0-385	160	5V-3A.	6.3 VCT-5A	3 ³ / ₄	3 ¹ / ₈	4 ¹ / ₁₆	3 ³ / ₈	2 ¹ / ₂	7

SINGLE SHELL POWER TRANSFORMERS

Type No.	High V.	DC MA.	Rec. Fil.	Amp. Fil.	W	G	H	M	N	Wt. Lbs.
R-106	300-0-300	50	5V-2A.	6.3 VCT-2.7A	3	2 ¹ / ₂	3 ¹ / ₄	2 ¹ / ₂	2 ¹ / ₁₆	2 ¹ / ₂
R-107	350-0-350	70	5V-3A.	6.3 VCT-3A	3	2 ¹ / ₂	3 ³ / ₈	2 ¹ / ₂	2 ¹ / ₁₆	3 ¹ / ₂

VERTICAL SHELL POWER TRANSFORMERS

Type No.	High V.	DC MA.	Rec. Fil.	Amp. Fil.	W	D	H	M	N	Wt. Lbs.
R-110	300-0-300	50	5V-2A.	6.3 VCT-2.7A	2 ¹ / ₂	2 ¹ / ₁₆	3 ¹ / ₄	2	1 ³ / ₄	2 ¹ / ₂
R-111	350-0-350	70	5V-3A.	6.3 VCT-3A	2 ¹ / ₂	3 ¹ / ₁₆	3 ¹ / ₄	2	2 ³ / ₈	3 ¹ / ₂
R-112	350-0-350	120	5V-3A.	6.3 VCT-5A	3 ¹ / ₄	3 ¹ / ₁₆	4	2 ¹ / ₂	2 ⁵ / ₁₆	5 ¹ / ₂
R-113	400-0-400	200	5V-3A.	6.3 VCT-6A	3 ⁷ / ₈	4 ⁵ / ₁₆	4 ⁵ / ₈	3	3 ³ / ₈	8

CHANNEL FRAME FILTER CHOKES

Inductance Shown is at Rated D.C.M.A.—Test Volts RMS: 1500

Type No.	Induct. Hys.	Current	Resistance Ohms	W	D	H	M	Wt. Lbs.
R-55	6	40MA	300	2 ³ / ₈	1 ³ / ₈	1 ³ / ₈	2	¹ / ₂
R-14	8	40MA	250	2 ⁷ / ₈	1 ¹ / ₂	1 ¹¹ / ₁₆	2 ³ / ₈	³ / ₄
R-15	12	30MA	450	2 ⁷ / ₈	1 ¹ / ₂	1 ¹¹ / ₁₆	2 ³ / ₈	³ / ₄
R-16	15	30MA	630	2 ⁷ / ₈	1 ¹ / ₂	1 ¹¹ / ₁₆	2 ³ / ₈	³ / ₄
R-17	20	40MA	850	3 ¹ / ₁₆	1 ⁷ / ₈	2	2 ¹³ / ₁₆	1
R-18	8	80MA	250	3 ¹ / ₁₆	1 ⁵ / ₈	2	2 ¹³ / ₁₆	1
R-19	14	100MA	450	3 ³ / ₄	1 ⁷ / ₈	2 ⁵ / ₁₆	3 ¹ / ₈	1 ¹ / ₂
R-20	5	200MA	90	4 ¹ / ₈	2 ¹ / ₄	2 ⁵ / ₈	3 ¹ / ₁₆	2 ¹ / ₂
R-21	3/15	200MA	90	4 ¹ / ₈	2 ¹ / ₄	2 ⁵ / ₈	3 ¹ / ₁₆	2 ¹ / ₂

FILAMENT TRANSFORMERS

CHANNEL FRAME TYPE

Pri. 115 V. 50/60 Cycles—Test Volts RMS: 1500

Type No.	Secondary	W	D	H	M	Wt. Lbs.
FT-1	2.5 VCT-3A	2 ⁷ / ₈	1 ¹ / ₂	1 ¹¹ / ₁₆	2 ³ / ₈	³ / ₄
FT-2	6.3 VCT-1.2A	2 ⁷ / ₈	1 ¹ / ₂	1 ¹¹ / ₁₆	2 ³ / ₈	³ / ₄
FT-3	2.5 VCT-6A	3 ⁵ / ₁₆	1 ⁷ / ₈	2	2 ¹³ / ₁₆	1
FT-4	6.3 VCT-3A	3 ⁵ / ₁₆	1 ⁷ / ₈	2	2 ¹³ / ₁₆	1
FT-5	2.5 VCT-10A	3 ³ / ₄	2 ⁷ / ₈	2 ⁵ / ₁₆	3 ³ / ₈	1 ¹ / ₂
FT-6	5 VCT-3A	3 ³ / ₄	2 ⁷ / ₈	2 ⁵ / ₁₆	3 ³ / ₈	1 ¹ / ₂
FT-7	7.5 VCT-3A	3 ³ / ₄	2 ⁷ / ₈	2 ⁵ / ₁₆	3 ³ / ₈	1 ¹ / ₂
FT-8	6.3 VCT-8A	4 ¹ / ₈	2 ¹ / ₂	2 ⁵ / ₈	3 ¹ / ₁₆	2 ¹ / ₂
FT-10	24 VCT-2A or 12V-4A	4 ¹ / ₈	2 ⁵ / ₈	2 ⁵ / ₈	3 ¹ / ₁₆	2 ¹ / ₂

STEP DOWN AUTO-TRANSFORMERS

220/240 Volt to 110/120 Volts, 50/60 Cycles.

All units have 6 foot cord and female receptacle, except R-64.



Type No.	Rating Watts	L	W	H	Mtg. Dim.	Wgt. Lbs.
R-41	85	3 1/8	2 5/8	3 1/8	2x1 7/8	4
R-42	125	3 1/2	3	3 1/2	2 1/4 x 2 1/8	5
R-43	175	3 3/4	3 1/4	3 7/8	2 1/2 x 2 1/4	5 1/2
R-44	250	4 3/8	3 1/4	3 7/8	2 1/2 x 2 7/8	6 1/2
R-45	500	4 5/8	3 7/8	4 5/8	3x3 1/4	12
R-46	1200	6 7/8	3 7/8	4 5/8	3x5 1/2	18
R-64	2500	10 1/2	4 3/4	6 3/4	3 7/8 x 9 7/8	30

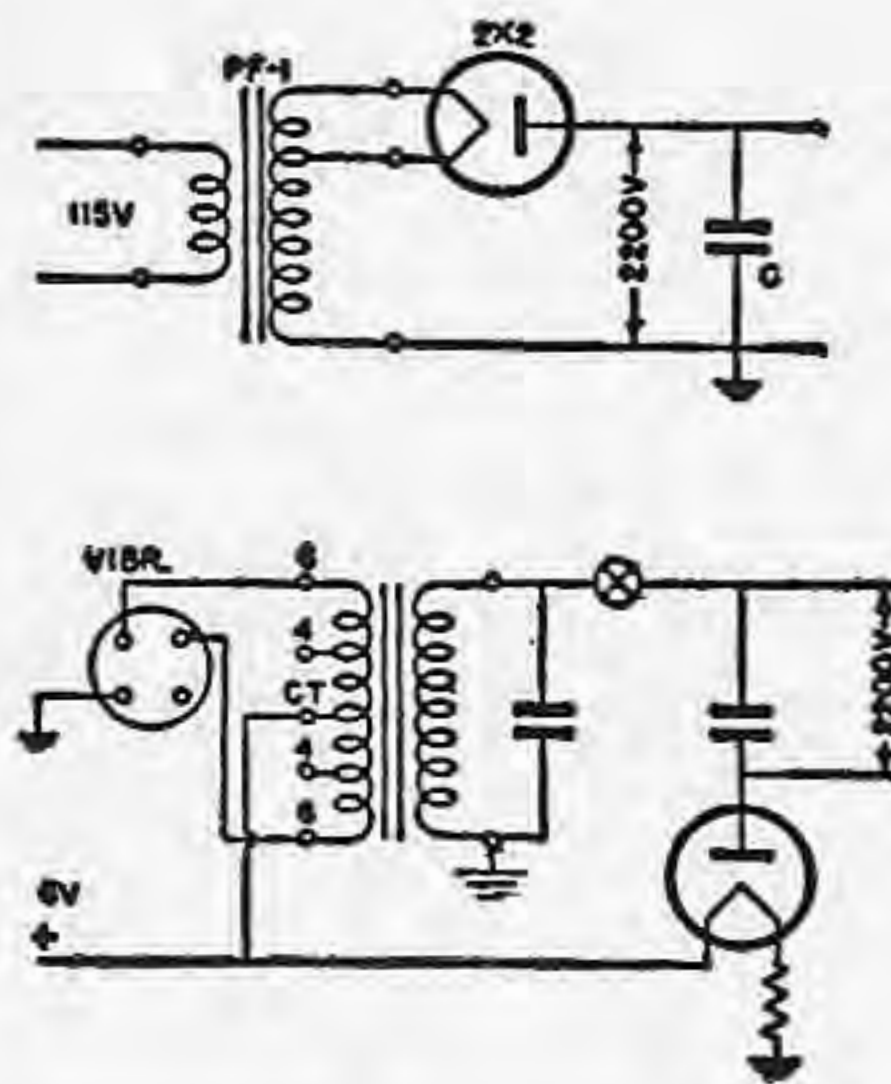
PHOTO FLASH TRANSFORMERS

Can be used for either standard (Amglo type) or trigger (Sylvania type) multiple flash bulbs. Circuit details included with transformer.

PF-1 Primary for 115 volts, 50/60 cycles. Secondaries for power supply delivering 2200 volts DC to condenser up to 100 Mfd. Compound sealed in G-3* case 2 1/8 x 2 3/4 (3 3/4 including flanges) x 2 1/2 inches high. Weight 2 lbs.

PF-2 For portable service. Primary tapped for 4 volt or 6 volt battery (full wave vibrator). Secondary for power supply delivering 2200 volts DC to condenser up to 60 Mfd. Compound sealed in G-3* case. Weight 2 lbs.

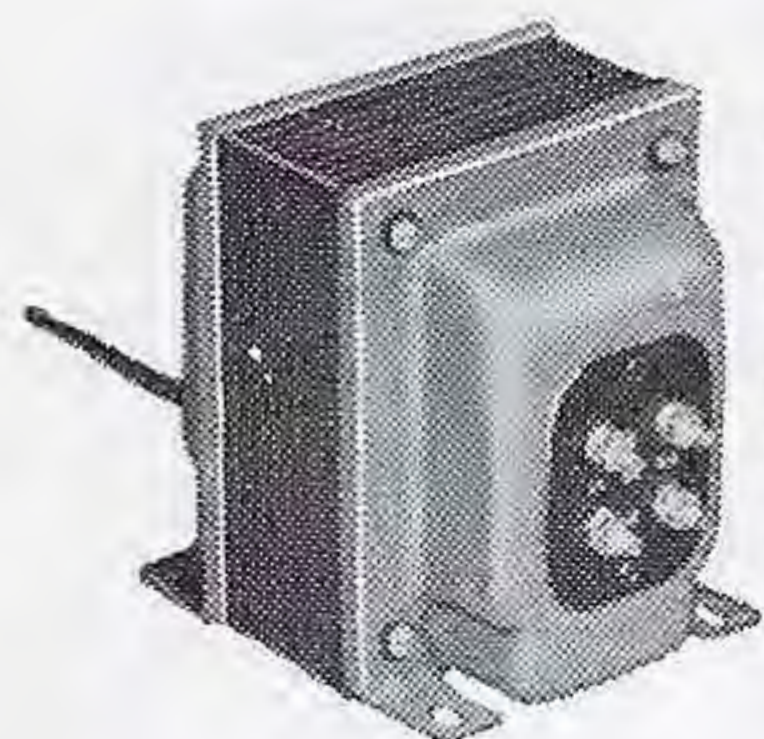
PF-3 Trigger Transformer 15 KV peak. 7/8 O.D. x 3 long. Weight 2 oz.
*See page 39



SIGNALLING AND CONTROL TRANSFORMERS

Primary 110-120 volts, 50/60 cycles—Secondary 4/8/12/16/20/24 volts

High power transformers suitable for operating relays, sirens, horns, gongs, etc. from 115 V. 50/60 cycle line. These units have four secondary terminals providing 4, 8, 12, 16, 20 and 24 volt output. The volt ampere rating is based on the 24 volt secondary tap with corresponding reduction at the lower voltages. Underwriters' approved primary leads are employed, and screw-type binding posts.

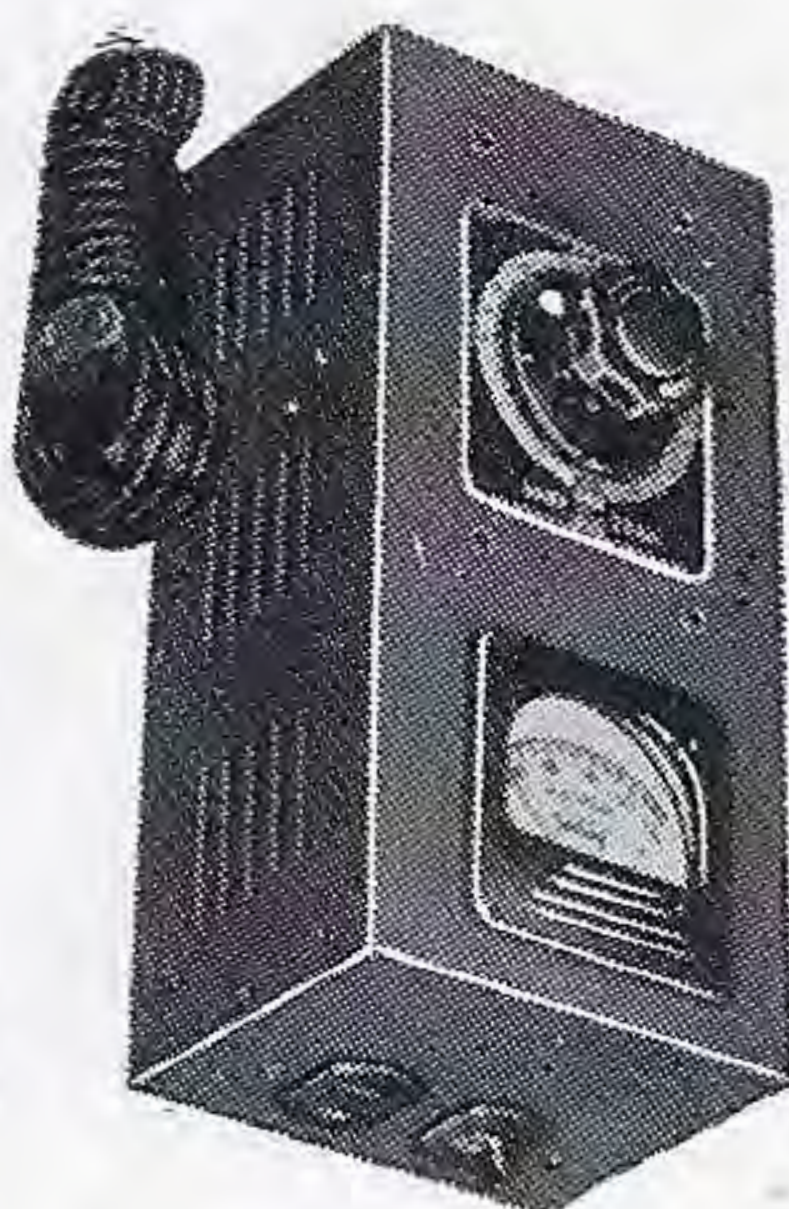


Type No.	Rating Watts	L	W	H	Mtg. Dim.	Wgt. Lbs.
SC-3	50	3	3 1/2	3 1/8	1 7/8 x 2 1/4	3
SC-4	100	3 1/4	4	4	2 1/8 x 2 1/2	5
SC-5	250	4	5	4 3/4	3 1/4 x 3	10

VARITRAN VOLTAGE ADJUSTERS

Input 115 volts 50/60 cycles. Output continually adjustable from 0-130 Volts through roller contact on exposed autotransformer winding. Regulation and efficiency are excellent, no wave form distortion. Output voltage is independent of load. Complete with line cord, switch, and receptacle . . . for loads up to 570 Watts . . . 5 A.

Type No.		L	W	H	Wt. Lbs.
V-1-M	with meter	4 7/8	9 7/8	3 5/8	14
V-1	without meter	4 7/8	8	3 5/8	12



ISOLATION TRANSFORMERS

Ideal for isolating line noise. AC-DC sets, etc. Excellent electrostatic shielding 1500 volt breakdown test. Six foot cord and female receptacle, except R-77.

Primary 110-120 volts 50/60 cycles—Secondary 110-120 volts
Except R-97 220 volt Primary—120 volt Sec.



Type No.	Rating Watts	L	W	H	Mtg. Dim.	Wgt. Lbs.
R-72	40	3 1/8	2 5/8	3 1/8	2x1 7/8	4
R-73	100	3 3/4	3 1/4	3 7/8	2 1/2 x 2 1/8	6
R-74	250	4 7/8	3 7/8	4 5/8	3x3 1/2	12
R-75	600	7 3/8	3 7/8	4 5/8	3x6	20
R-76	1200	8 1/2	4 1/2	5 7/8	3 5/8 x 6 5/8	30
R-77	2500	12	7	9	6x11	70
R-97	250	4 7/8	3 7/8	4 5/8	3x3 1/2	12

LINE VOLTAGE ADJUSTERS WITH METER

The perfect answer to abnormal or fluctuating line voltage. Adjust switch so that meter reads at red line and you know that your equipment is working at correct voltage.

These units combine a tapped auto-transformer with a switch and meter in a compact, rugged assembly.

The nine tap switch provides for line voltage of 60 to 140 volts on 115 volt output models and 160 to 240 volts on 230 volt output model.

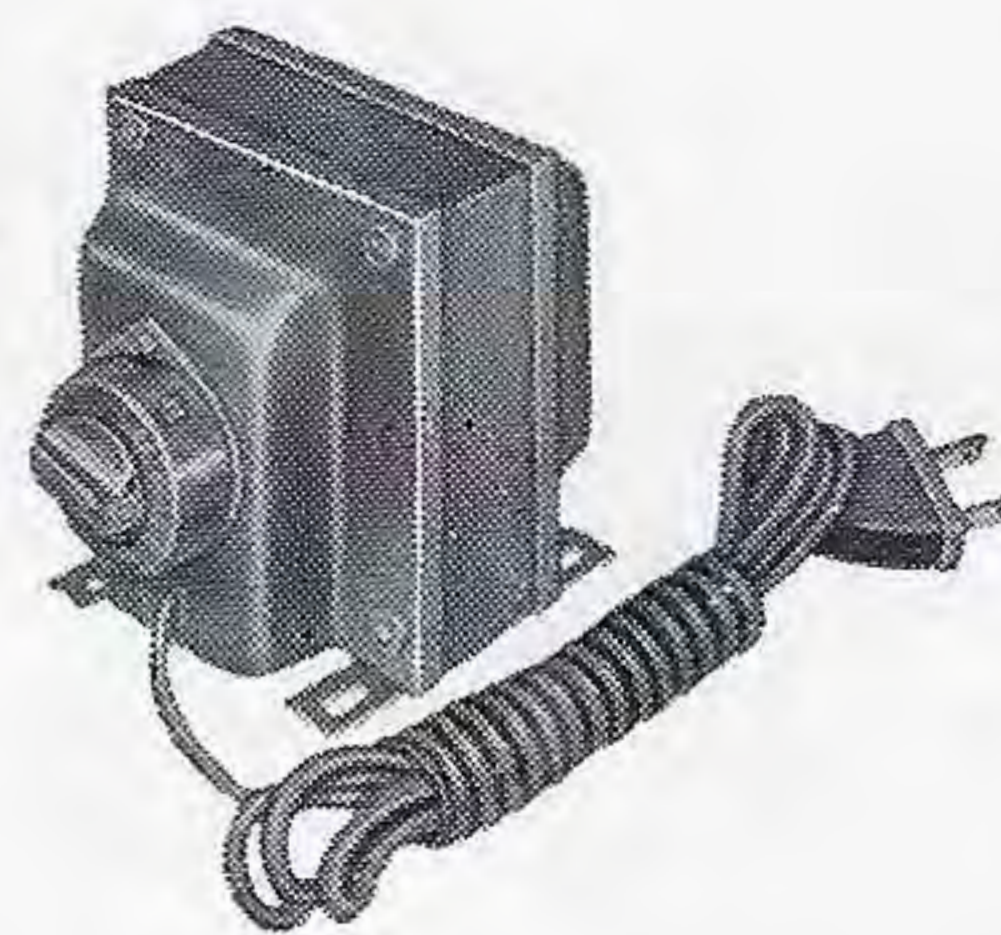
All units are designed for 50/60 cycle service and come complete with 6 foot input cord and plug and outlet receptacle.



Type No.	Primary Voltage	Volts Sec.	Watts Rating	L	W	H	Wgt. Lbs.
R-78	60, 70, 80, 90, 100, 110, 120, 130, 140	115	150	7	4	4 3/4	6
R-79	60, 70, 80, 90, 100, 110, 120, 130, 140	115	300	7	4	4 3/4	9
R-80	60, 70, 80, 90, 100, 110, 120, 130, 140	115	600	10 1/4	4	4 3/4	13
R-81	60, 70, 80, 90, 100, 110, 120, 130, 140	115	1200	10 1/4	4	4 3/4	21
R-86	160, 170, 180, 190, 200, 210, 220, 230, 240	230	1200	10 1/4	4	4 3/4	21

EXPORT VOLTAGE ADAPTER

Complete with cord and plug and special locking switch providing for line voltages of 105, 115, 125, 135, 150, 210, 230, 250 volts; 42 to 60 cycles. Output voltage 115.



Type No.	Rating Watts	L	W	H	Mtg. Dim.	Wgt. Lbs.
R-47	85	4 5/8	3	3 1/2	2 1/4 x 2 1/4	4 1/2
R-48	150	4 5/8	3 1/4	4	2 1/2 x 2 1/4	5 1/2

TV VOLTAGE REGULATOR

Complete with cord, plug, and special locking switch. Permits operation of 115 volt 50/60 cycle TV sets on line voltages of 85, 90, 95, 100, 105, 110, 120, 125 V.

Type No.	Rating Watts	L	W	H	Mtg. Dim.	Wgt. Lbs.
R-49	350	5	3 1/4	4	2 1/2 x 2 3/4	5

MICROPHONE CABLE TRANSFORMERS

UTC Cable transformers are designed to be inserted in the cable circuit, and are ruggedly constructed to withstand mechanical abuse. The cable connections (supplied less cable) are made through spring strain relief to terminal boards inside the end caps. 1 1/2" diameter . . . 2 1/2" long . . . 1/2 lb.

Type MC-1—primary tapped 30/50 and 200/250 ohms, secondary to grid, standard fidelity.

Type MC-2—primary tapped 30/50 and 200/250 ohms, secondary to grid, high fidelity.





FOR MILITARY COMPONENTS

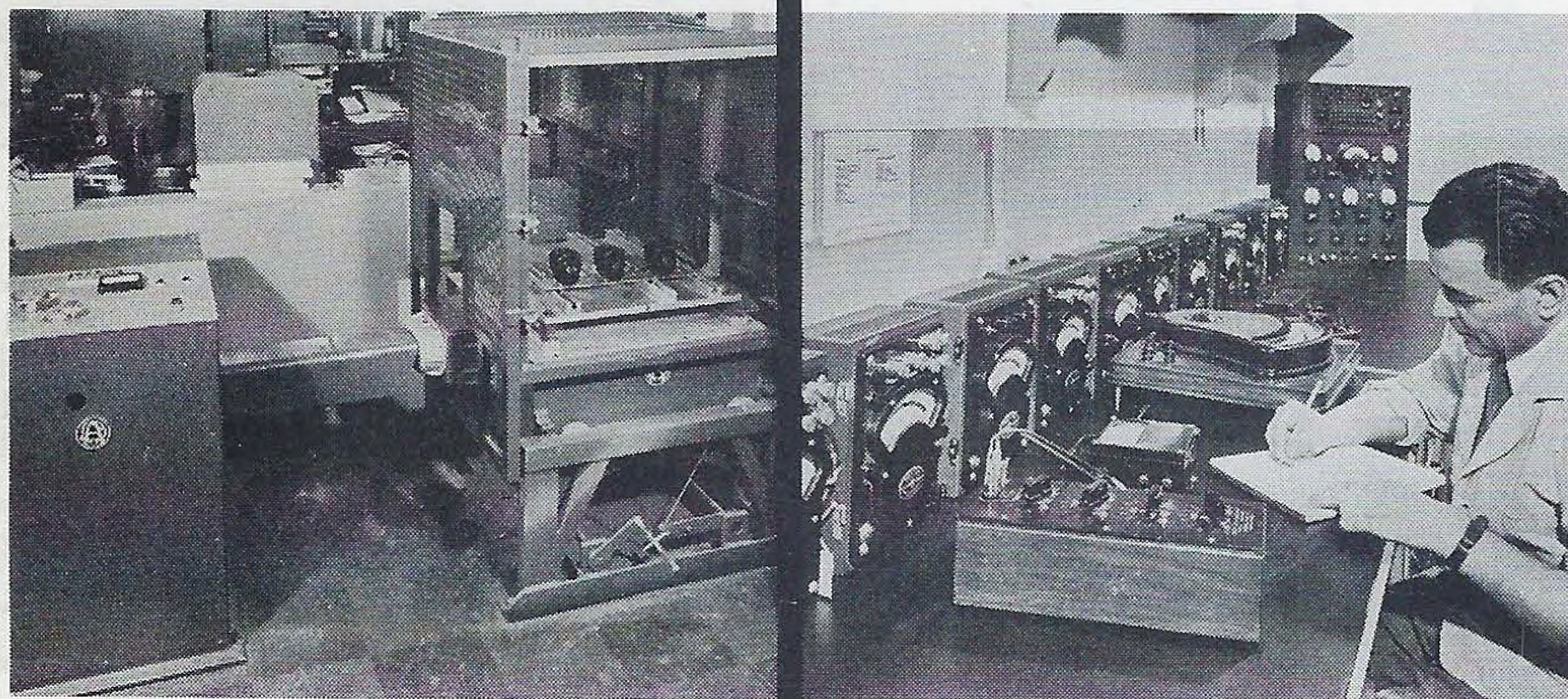
OUR 14 MILLIONTH MILITARY UNIT SHIPPED THIS YEAR

The UTC Laboratories include complete facilities for testing to MIL-T-27A. These facilities are employed for continuous quality control of production as well as for proving new items. Virtually all hermetic items in this catalog have been proved to meet MIL-T-27A or are in process of proving tests. By using a catalog UTC item both costs and delays of initial testing to MIL-T-27A are consequently eliminated.



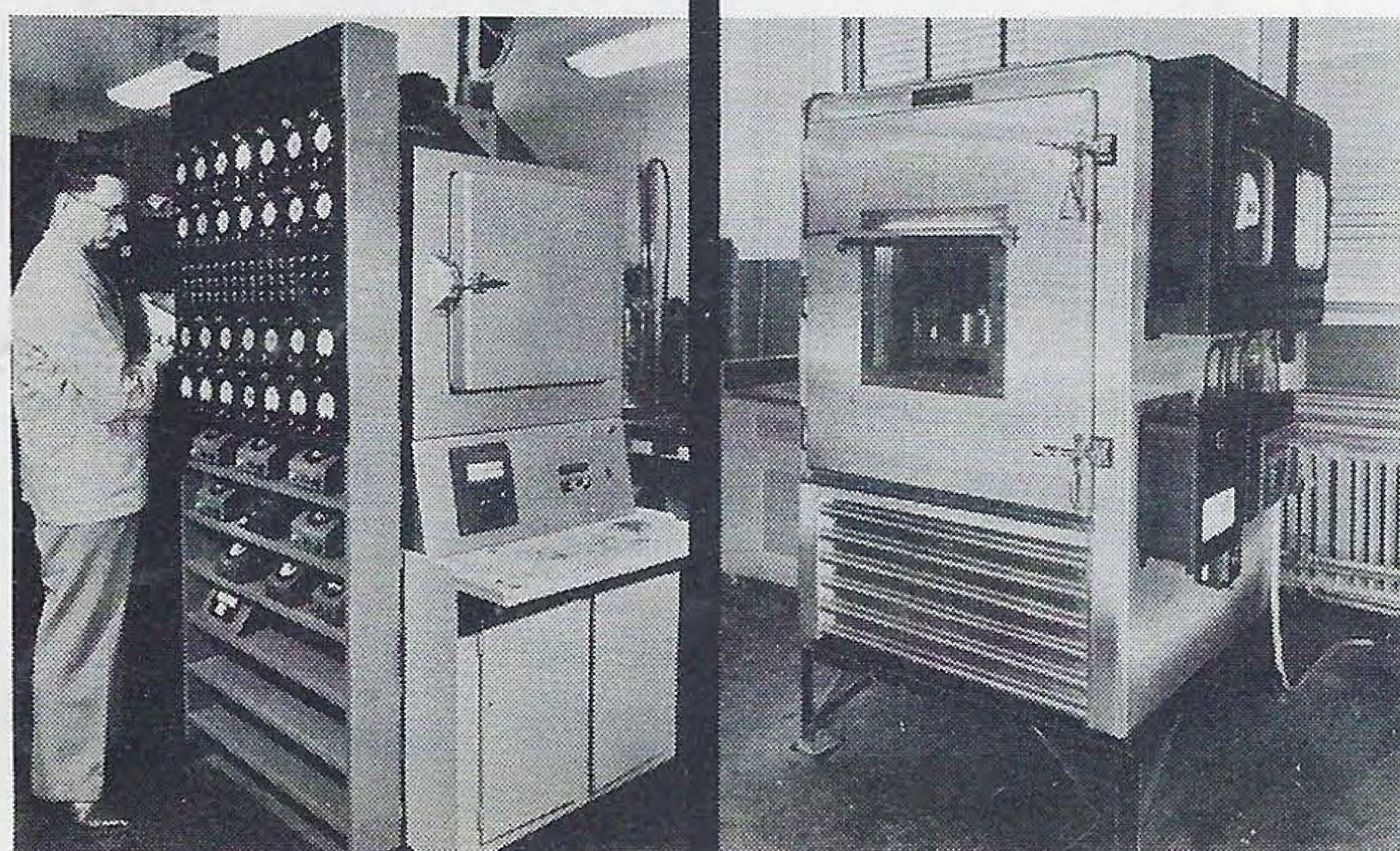
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Altitude Test and High Frequency Vibration for Airborne Units



Automatic Programmed MIL-T-27A Vibration Test

Primary Standard Instrument Calibration



Accelerated Life Testing for Insulation Systems and Processes

Automatic Programmed Humidity Testing

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